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THE PRECIPITIN TEST FOR BLOOD*

LUDVIG HEKTOEN, M.D.

CHICAGO

The study of immunity as manifested by the reactions of the animal body to microbes, toxins and protein materials in general has given us many tests of great value. The phenomena of agglutination, of complement fixation, of altered reactivity, of opsonification and of serum precipitation have all been put to practical use in tests, some of which are used every day throughout the civilized world. Speaking generally, the only way now known to trace protein substances back to their source, that is, to the species from which they come, is by means of their immune reactions; and in the case of blood and other animal products, practically the only method for purposes of biologic differentiation is the precipitin test. Because the determination of the ultimate source of blood spots and stains often is vital to the administration of justice, the precipitin test is of special forensic value and interest, and it is primarily from the medicolegal point of view that I wish to discuss the test at this time. The test has been used in this country for the identification of blood for forensic purposes since it was introduced, although probably not so widely as it should or might have been; but it does not appear that any standard method of procedure even with respect to certain essential points as yet has become established, and there are hardly any adequate detailed descriptions of the test.[1]

The precipitin test rests on the fact that when a suitable animal is injected with foreign protein, its serum, when mixed with a solution of the foreign protein, will form a precipitate. This reaction is due to the accumulation in the blood of the injected animal of newly produced substances, which are called precipitins. By foreign protein is meant protein from some other source than the species to which the animal injected belongs. Thus serum for the identification of blood is obtained by injecting rabbits (the animal nearly always used for this purpose) with the blood or serum of an animal of a different species, the exact species in each case depending on the kind of blood one intends to test for with the resulting precipitin serum; for the action of precipitin serum is limited to proteins of the same kind as those that were injected; indeed, the precipitin test owes its practical value to this fact.

THE PRODUCTION OF PRECIPITIN SERUM

At present we know of only two animals that are good and suitable precipitin producers for practical purposes, the rabbit and the domestic fowl. Hitherto the rabbit has been used almost altogether, Sutherland[2] in India being the only one to use the fowl on a large scale. Of the two the fowl seems to be the more ready and reliable producer, but fowl serum must be handled with special care because of the tendency under certain conditions to give nonspecific reactions. So long as rabbits are plentiful, it would seem best, at least in this country, not to change to the fowl except for special purposes, as when it is necessary to test directly for rabbit blood. In any case young, healthy, previously unused animals should be selected; they should be kept under hygienic conditions and given enough of good food. It is always advisable to inject several rabbits at the same time, especially when antihuman precipitin is to be produced, because in some rabbits the response to the injection may be rather insignificant.

Either whole blood, defibrinated or citrated, or serum may be injected; in my experience the results have been about the same. As we deal with whole blood in the identification of blood spots, there may be advantage in using antiserum produced by whole blood; this may be counterbalanced, however, by the fact that serum is somewhat richer in proteins. Blood should not be injected intravenously because of the danger of sudden death. To produce antihuman precipitins, albuminous urine and various transudates have been injected also; but the best results are secured from blood or serum, and in these days when patients are bled so frequently from the veins for diagnostic tests, there is no difficulty in obtaining the required human blood or serum, which need not be absolutely fresh provided it is free from bacteria. The injection of rabbits with washed human corpuscles, now so often practiced in order to produce hemolytic amboceptor for the Wassermann test, not infrequently gives as a by-product in sufficient concentration for practical use specific precipitins for the proteins in human blood.

In the immunization of rabbits, good results may be obtained with various methods that differ more or

* From the Memorial Institute for Infectious Diseases.

1. The literature up to about 1908 on precipitins and their medicolegal use is indexed fully in Volume 13 of the Second Series of the Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army, Washington, D. C. Reference is made also to Nuttall: Blood Immunity and Blood Relationship, 1904. Graham-Smith and Sanger: The Biological or Precipitin Test for Blood Considered Mainly from Its Medicolegal Aspect, Jour. Hyg., 1903, **3**, 258. Graham-Smith: The Biological or Precipitin Test for Blood, Considered Mainly from Its Medicolegal Aspect, II, ibid., 1903, **3**, 354. Sutherland: Blood Stains, Their Detection, and the Determination of Their Source, 1907. Bordet: Studies in Immunity, collected and translated by F. P. Gay, 1909. Uhlenhuth and Steffenhagen: Die biologische Eiweiss-Differenzierung mittels der Präzipitation unter besonderer Berücksichtigung der Technik, Kolle and Wassermann Handbuch, 1913, **3**, 256. Hunt and Mills: Some Experience Bearing on the Medicolegal Value of the Precipitin Test for Human Blood, Boston Med. and Surg. Jour., 1917, **176**, 48. Stokes and Stoner: The Use of the Precipitin Test for the Detection of Human Blood in Criminal Trials, Boston Med. and Surg. Jour., 1917, **177**, 65.

2. Sutherland, W. D., Note on 2,643 Medicolegal Cases, in which 6,566 Articles, Suspected to be Blood-Stained, were Examined, Indian Jour. Med. Research, 1915, **3**, 205.

less in minor details. The tendency is to inject smaller quantities of blood or serum than formerly. Several rabbits should be injected at the same time because, as stated, there is great individual variation in the power to produce precipitins, especially antihuman. A good way is to inject from 1 to 2 c.c. of serum intravenously, repeat in six days or so, and then after six or eight days to inject 4 or 5 c.c. intraperitoneally. Or from 5 to 6 c.c. of blood or serum may be injected intraperitoneally four or five times at intervals of six days or so. In either case the serum should be tested about nine to twelve days after the last injection, because about this time the precipitin content reaches its high point; as it remains at this point only a few days, the tests must be made promptly so that if the serum is found to be potent, goodly quantities may be collected while the precipitin still runs high. It has been found that the danger of death from anaphylactic reactions when the last injections are given may be avoided by first giving a small so-called desensitizing injection, 1 or 0.5 c.c., intravenously or intraperitoneally.

A more rapid method of immunization consists in giving intraperitoneal injections of increasing quantities — 5, 10, 15 c.c. — on three successive days. The same total quantity of antigen injected at one time may also give good results. As a rule the precipitin in either case reaches its acme about the twelfth day or thereabouts. If serum is used, the injections may be made intravenously. In my experience,[3] this so-called rapid method yields more reliable results with beef, sheep, horse, swine, cat and chicken blood or serum than with human, and it is probable that in the last case the desired result will be obtained oftener by repeated injections at longer intervals.

In the case of the fowl a single intraperitoneal injection of 20 c.c. of blood or serum usually in ten or twelve days yields a precipitating serum of sufficient strength for practical purposes.[4]

It is not necessary now to describe the details of injections, bleeding, and collection of serum. At every step scrupulous effort must be made to prevent contamination; contaminated serum is useless because it may give misleading reactions. Sterile serum may be kept for months in the cold without much loss of potency. It is best to store serum in small bottles or tubes, each of 1 or 2 c.c., so that there need be no danger of contaminating a large quantity each time a little is to be used. A small amount of chloroform may be added as preservative.

Occasionally rabbit serum is opalescent; such serum is useless because when put in test mixtures one cannot tell for sure whether precipitates are formed or not. In order to avoid opalescence of the serum, it is recommended to let the animal fast for eighteen hours or so before it is bled. In the case of the fowl, only roosters should be used, as the serum of hens often cannot be used on account of its fat content.

1 2 3

Fig. 1.—Foam Test. Persistence of bubbles about ten minutes after blowing through the fluids in Tube 1, which contained a thousandfold dilution of human blood, and in Tube 2, which contained extract of a blood spot of about the same strength. Collapse of all bubbles in Tube 3, which contained pure salt solution.

TESTS OF PRECIPITIN SERUM

To identify blood or other protein substances it is necessary to use precipitin serum of some degree of potency and of a strictly limited range of action.

Test for Strength. — Various methods have been practiced to determine the strength of a precipitin serum, but I shall mention only the simple method of finding the highest dilution in salt solution of the antigen — the serum or blood of the species used in the injection — with which the precipitin serum forms a precipitate within a few minutes at ordinary room temperature.

Small, perfectly clean and perfectly clear glass tubes are best, the lumen being about 0.5 cm. in diameter. In each of a series of such tubes in a small rack is placed 0.5 c.c. of antigen dilution, the first tube receiving the lowest dilution, the next the next higher, etc. (for example, 1:500, 1:1,000, 1:1,500, 1:2,000, etc.); there is now introduced by means of a capillary pipet 0.1 c.c. of antiserum at the bottom of each tube, special care being taken to get a precise line of contact between the two fluids. The antiserum also can be run in slowly at the side of the tube; being heavier than the diluted antigen it will go to the bottom of the tube, but the line of contact will not be quite so sharp as when it is introduced at the bottom with a pipet. The tubes, which are kept at room temperature, are now watched for the formation of a grayish-white precipitate at the plane of contact between the fluids.

If a precipitate forms almost at once in the antigen dilution of 1:1,000, the antiserum is strong enough to be used for blood tests for forensic purposes. An antiserum that forms a precipitate almost at once in thousandfold dilution of the antigen usually gives reactions in much higher dilutions—1:20,000 or higher after a longer time, say twenty minutes. The strength or titer of antiserum may be designated by the dilution of antigen with which it forms a definite precipitate within a given time, at room temperature. For instance, if an antihuman serum gives a precipitate within twenty minutes in a dilution of human serum or blood of 1:20,000, its strength or titer may be said to be 1:20,000 at twenty minutes.

The precipitin reaction is observed best by holding the tubes near a black, flat object (book cover, ruler) held directly in the path of the light; the precipitate, at first composed of fine particles, and sharply defined, may become more flocculent and sink to the bottom.

To make tests with dilutions of the whole blood, the corpuscles are laked by means of water; the normal salt content is restored by adding the required amount of 1.8 per cent. salt solution (double the strength of physiologic sodium chlorid solution), and further dilutions are made with salt solution of the usual strength. When fowl antiserum is used, the salt content of all dilutions should be 1.8 per cent., as then there is less danger of nonspecific reactions.[4] When fowl astiserum is taken out of the ice box it should be left at the room temperature for an hour or two before it is used.

In place of the contact or ring method, some observers simply mix the antiserum with the antigen;

3. Hektoen, Ludvig: On the Production of Precipitins, Jour. Infect. Dis., 1914, **14**, 403.
4. Hektoen, Ludvig: The Production of Precipitins by the Fowl, Jour. Infect. Dis., to be published.

a positive reaction now appears in the form of a diffuse cloudiness of the whole mixture. This method is not as precise and sensitive as the contact method, and is not recommended for practical blood tests.

Tests for Specificity.—On account of the relationships of species, almost every strong precipitin serum may form precipitates with proteins, at least in low dilutions, of species related to that species, the blood proteins of which were used for the production of the serum. Indeed, any strong antimammalian serum may react in low dilutions — 1:10 or so — of mammalian serums generally. This is the mammalian reaction of Nuttall.[5] In the case of kindred species, the precipitin affinities often are more marked; for instance, an anti-goat serum may react in high dilutions of sheep and beef as well as of goat serum or blood. Further examples of closely related groups are the horse, ass and mule; the dog, wolf and fox; the domestic fowl, turkey, goose, duck and pigeon; the hare and the rabbit, each with more or less pronounced common precipitin reactions. Man and monkey, from the highest down, constitute another group with special precipitin interreactions between the members. How it nevertheless may be possible by the precipitin test to identify the blood of the individual species is discussed later. As each antiserum may vary in the number and strength of its group and other precipitins, and as it must be known to be free from nonspecific reactions before it is used, it is necessary, besides fixing its potency, to determine the exact range of its action. The test for specificity is carried out in the same manner in general as the test for potency; that is to say, tubes are prepared in the same way with dilutions of as many other serums or bloods beside that used in the production of the serum as seem necessary to afford a thorough test, certainly not less than two, the antiserum added as before, and the results noted. At the same time the antiserum is tested with salt solution only to determine whether any precipitate then forms.

A usable antiserum must be perfectly clear; it must have a certain minimum specific precipitin strength, and it must not give any misleading nonspecific reactions.

TABLE 1.—SPECIFICNESS OF PRECIPITIN IN SERUM OF RABBIT INJECTED WITH HUMAN BLOOD

Blood	Highest Dilution Giving Precipitate with Anti-human Serum after Twenty Minutes at Room Temperature
Fish	1:10
Chicken	1:10
Rabbit	0
Guinea-pig	1:10
Rat	1:10
Cat	1:10
Dog	1:10
Swine	1:10
Sheep	1:10
Beef	1:10
Horse	1:10
Goat	1.10
Monkey (Macacus rhesus)	1:100
Human	1:5,000

To illustrate: If an antihuman serum is perfectly clear; if it forms a precipitate practically at once in a 1:1,000 or higher dilution of human blood or serum; and if with that of any other species, then in very low dilutions only, say from 1:10 to 1:100, and much more slowly, save possibly in the case of the monkey (group reaction); and if it does not form any precipitate with salt solution, then it may be used for tests for human blood for forensic purposes (Table 1).

5. Nuttall: Blood Immunity and Blood Relationship, 1904.

PREPARATION OF MATERIAL FOR PRECIPITIN TEST

Materials submitted for blood tests usually are stains and spots on any of the great variety of objects on which blood may fall or be smeared (Table 2). The first question to decide is whether the suspicious spots and stains consist of blood, and for this purpose well known chemical, microscopic and spectroscopic methods are available which need not be described now.[6] It is necessary to determine whether spots and stains are

TABLE 2.—PRECIPITIN TESTS FOR BLOOD

Material	Kind of Blood Present	Remarks
Blood on hat, coat, vest, shirts and trousers	Human	The accused claimed the spots were caused partly by fish, partly by calf blood
Blood on blade and inside handle of knife	Human	
Blood on miner's shirt..	Human	In this case, efforts had been made to wash away the blood, but deep in the texture of the shirt the threads were still incrusted with blood
Blood on handle of pickax	Human	
Crust of blood on ax....	Human	Ax found in ruins of house burned down after triple murder
Blood on dollar bill.....	Human	
Blood on coat and trousers	Human	
Blood on bedclothes.....	Human	
Blood on old newspaper	Rabbit	Antirabbit chicken serum used
Smears of blood on neck of bottle	Human	
Blood on shirt	Human	
Blood on shavings.....	Human	
Blood on hair, wall paper, floor	Human	
Blood on shoestring.....	Human	
Blood on trousers.....	Not human	
Blood on paper.....	Human	
Blood on shoes.....	Rabbit	Antirabbit chicken serum used

made by blood, not only because blood may be simulated by paint, fruit juices and in other ways, but also because spots and stains made by protein materials other than blood may react in the same way as blood to the precipitin test. For instance, antihuman serum alone will not distinguish spots by human blood from spots by other human protein-containing material such as albuminous urine, seminal fluid, purulent sputum, exudates and transudates. All the antihuman serum can tell us is that the spots are made by human proteins, and whether they are made by blood must be determined by the general tests for blood.

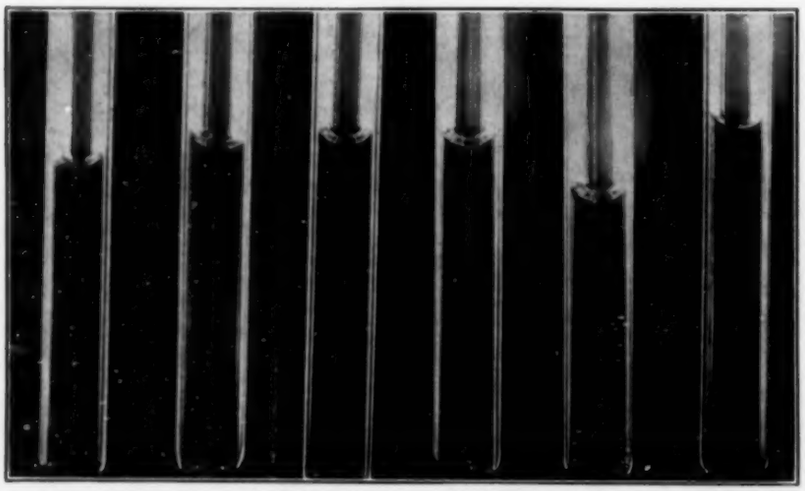
All glassware and other articles used in the precipitin test must be absolutely clean and sterile. It is best in all final tests to use tubes that are practically new, because tubes that have been boiled and sterilized many times may be no longer clear. A good supply of fresh, sterile pipets should be on hand.

Salt solution (0.9 per cent.) is the best general solvent for extracting proteins from material to be tested. If practicable, crusted material may be scraped off, ground up carefully and mixed with a small quantity of salt solution; or it may be necessary to place small pieces of cloth, paper or other substances, including some or all of a suspected spot, directly into the solution. Whenever possible, extracts should be made also of unspotted parts of the substratum for purposes of control tests.

How long to continue the extraction depends on the quantity and solubility of the protein in question; if it

6. Wood, E. S.: Medicolegal Examination of Blood and Blood Stains: A Text Book of Legal Medicine and Toxicology, edited by Frederick Peterson and Walter S. Haines, 1904, **2**, 722.

is to be kept up for more than an hour or two, it is better to put the mixture in the ice box and to add a little chloroform to restrain the growth of bacteria. The passage of protein into solution is indicated if bubbles made by blowing through the fluid with a pipet tend to persist (foam test); also if cloudiness develops on application of the nitric acid heat test. As only a dilute solution — 1:1,000 — is wanted for the precipitin test, extracts of blood usually have to be diluted with salt solution. When the nitric acid heat test barely causes a faint opalescence in a blood dilution its strength is regarded as about 1:1,000. Comparative foam tests, known blood dilutions being used as the standard, also help to fix the strength of an extract (Fig. 1). A 1:1,000 dilution of blood is practically colorless by transmitted light. The extracts should be clear as water; turbid extracts must be cleared by filtration or centrifugation. The reaction must be neither strongly acid nor alkaline to litmus; for neutralization, 0.1 per cent. sodium hydroxid or hydrochloric acid solution should be used; dilutions of blood at 1:1,000 rarely need to have the reaction corrected, but extracts of wood, bark and leather may contain acids that cause cloudiness in rabbit serum.



1 2 3 4 5 6

Fig. 2.—Precipitin Test for Human Blood: Tube 1, extract of blood on shirt of estimated dilution 1:1,000 + antihuman rabbit serum; Tube 2, extract of blood on shirt of estimated dilution 1:1,000 + normal rabbit serum; Tube 3, extract of bloodless part of shirt + antihuman rabbit serum; Tube 4, salt solution + antihuman rabbit serum; Tube 5, dilution of human blood 1:1,000 + antihuman rabbit serum; Tube 6, dilution of sheep blood 1:1,000 + antihuman rabbit serum. The precipitates in Tubes 1 and 5 formed almost at once; photograph was taken from five to eight minutes after introduction of the antiserum.

Stains that do not extract well with salt solution may give better results if treated with a 1 per cent. solution of potassium cyanid; the alkalinity should be corrected with tartaric acid (Sutherland).

In case of cloth with suspicious stains that yield no information on being scraped or soaked, it is a good plan to cut out small pieces from the stains and tease them apart. The single threads running in the depth of the stained part may be found incrusted with blood, that is, covered with small crusts which contain red blood corpuscles or in which the blood is demonstrable in other ways. Even when the cloth has been washed recently, incrustations may be found in the depth, especially, of course, if the cloth is of a heavier sort.

THE ACTUAL TEST AND CONTROLS

The precipitin test requires a number of careful controls to guard against error; the antiserum must be tested with salt solution, with the blood against which it is known to act, and with other bloods in order to make sure that it gives a specific reaction only. Samples of various kinds of blood should be kept on hand for control tests. For this purpose blood may be dried in drops on filter paper or linen, each drop being made by a definite quantity (0.1 or 0.05 c.c.); or the blood may be kept in the cold, diluted as described, say 1:100 in salt solution. As the reactive power of blood kept in solution is said to weaken gradually, too long intervals must be avoided before new solutions are prepared. To avoid still other chances of error, the extract of the unknown blood must be tested with normal rabbit serum or, if fowl antiserum is used, with normal fowl serum, and extract of blood-free parts of the substratum on which the unknown blood was situated is to be tested with antiserum. These precautions have to be observed in connection with every forensic precipitin test — nothing may be taken for granted. Assuming now that spots on a shirt that have been shown to consist of blood are to be tested for human blood, the precipitin test may be conducted in accord with the scheme presented in Table 3, it being understood that the quantity of extract or control solution in each tube is 0.5 c.c. and of antihuman rabbit serum or normal rabbit serum, 0.1 c.c. These quantities may be reduced if desired in order to save material; indeed, the test may be made in capillary tubes if necessary.

If a typical precipitate (Fig. 2) develops within a minute or two in Tubes 1 and 5 while no precipitate forms in any of the other tubes after standing for twenty minutes, all at the room temperature, then the conclusion is warranted that the blood on the shirt is human blood. Some observers would add, provided monkey blood can be excluded (see final section).

Having obtained a positive reaction with the extract under the aforesaid conditions, I always determine next the highest approximate dilution of the extract that reacts with the antiserum after twenty minutes at room temperature, thus still further verifying the specificness of the reaction.

Usually the only questions asked are whether certain spots and stains are due to blood, and if so, to human blood; but sometimes it becomes necessary to determine if possible the exact species of blood that is not human. The scheme for human blood is applicable

TABLE 3.—SCHEME FOR PRECIPITIN TEST (FIG. 2)

Tubes	
1	Extract of blood on shirt + antiserum
2	Extract of blood on shirt + normal serum (estimated dilution of blood in Tubes 1 and 2, 1:1,000)
3	Extract of bloodless part of shirt + antiserum
4	Salt solution + antiserum
5	Human blood or serum 1:1,000 + antiserum
6	Blood or serum other than human 1:1,000 + antiserum
7, 8, etc.	Same as Tube 6, but with different bloods.

in general with, of course, such changes as to antiserums and controls as are indicated in the given case from the facts at hand. If the blood corpuscles are preserved, it may be possible to determine from the

absence or presence of nuclei whether or not one is dealing with mammalian blood. Often tests with various antiserums may be made before a positive reaction occurs, and it must not be forgotten that absence of reaction may be due not only to failure to hit on the right antiserum, but also to changes in the unknown blood whereby it has lost its power to react.

The question whether more than just one kind of blood is present in material to be examined may be raised. It has been found that in mixtures each kind of blood present can be identified by the precipitin test; in such cases, antiserums of as high potency as possible should be used, as it may be difficult otherwise to detect proteins present in small amounts.

FACTORS THAT MAY INTERFERE WITH THE REACTION

The power of blood to react with precipitin may be reduced or completely destroyed by alcohol, by formaldehyd, cresol and other germicides, by acids and alkalis and other chemicals, by peptic digestion, by decomposition, and by heat. Badly decomposed blood may react, but it is hard to get clear extracts. Fluid blood is said to lose power to react on being heated at from 60 to 90 C., but dried blood may resist heating at 150 C. Rust also is said to change blood so that it reacts less readily. Blood in spots from 15 to 60 years old has been identified successfully, but certain statements that materials from thousand year old mummies may give the precipitin reaction have been contradicted.

Dried blood resists harmful influences much better than fluid, and if blood found in the fluid state is to be kept for tests later on, it is better to dry samples on filter paper than to keep it in fluid form in which it may decompose. Under no circumstances should blood or bloody material for the precipitin test be put in alcohol, because alcohol causes changes that interfere with the test.

OTHER USES OF THE PRECIPITIN TEST

The precipitin test may be of value also in the identification of bone and other tissue the origin of which is in doubt, as perhaps only fragments and scraps are at hand. When dissolved, the proteins in and of the tissues give the same general response to the precipitin test as the proteins of the blood of the species concerned. The only exception to this rule is furnished by the crystalline lens, which is unique, as it reacts only to serum produced by injections of lens substance, and that without regard to species. Bone should be reduced to powder, washed thoroughly with ether or benzin to remove the fat, dried, and then extracted with salt solution. Tissue of other nature may be treated according to the same principles. Such extracts are tested in the same general way as blood extracts.

Putting white of egg in urine to simulate albuminuria, and spattering nonhuman blood on clothing and bedding to feign spitting of blood, have been detected by the precipitin test. The test has been used extensively in certain European countries to detect adulterations of meat products and other foods, as flour and honey; it has been found of value, too, in the administration of game laws.[7] Finally, it may be mentioned that under certain circumstances the precipitin test may prove of service in the study of occult blood in the feces; but these are all matters that may not be discussed at this time.

SPECIAL METHODS FOR THE DIFFERENTIATION OF BLOOD OF CLOSELY RELATED ANIMALS

Examples of related animals with more or less common precipitin reactions have been given. In thousandfold dilution a blood may react so much more promptly with its own antiserum than even lower dilutions of related blood that commonly no difficulty arises, provided the limits as to dilution and time are followed exactly as prescribed and the necessary controls included in the test. Nuttall's experiments, to which I have referred, were made according to a totally different plan, the blood dilution being several times lower than 1:1,000, and the mixtures allowed to stand for several hours. To repeat: A reaction between an antihuman serum and a thousandfold blood dilution is diagnostic of human blood, provided it becomes evident within a few moments and that within twenty minutes at room temperature no reaction occurs between the same antiserum and like dilutions of the blood selected for the control tests Sutherland[8] made a special study of stains by the blood of many varieties of monkeys, his tests being made with the dilutions and time limit just set forth, and in no instance, not even in the case of the orang, did he get a positive result with antihuman serum; consequently, special methods do not seem necessary to distinguish human from monkey blood. These observations should be repeated so that if possible final standards may be fixed. In this country the question whether ape or monkey blood may be present is not likely to arise, because the circumstances, as a rule, preclude all chance that such blood can be present.

That differentiation may be difficult is illustrated by the ruminant group. Antibeef serum, for instance, may react in high dilution of beef, sheep, goat and perhaps also other ruminant blood. Indeed, any antiruminant serum may react with any ruminant blood in considerable dilution, although not with equal promptness in all cases. Several expedients have been recommended in this and similar cases:

1. *Specific Absorption* (Weichardt).—This is based on the principle that by mixing, let us say, antibeef serum with goat serum and then removing the resulting precipitate, the special antigoat precipitin will be removed. The method is circumstantial and is not regarded as of practical value.

2. *Cross Immunization* (Uhlenhuth).—This consists in obtaining precipitin serum from one animal for the proteins of a related animal. Injecting certain Old World monkeys with human serum, Uhlenhuth obtained antihuman precipitins, but this result seems to be quite exceptional, as neither Sutherland[8] nor Berkeley[9] were able to confirm it. Uhlenhuth was able to demonstrate hare blood on a cane by means of antihare precipitins developed in the rabbit, antihare fowl serum reacting equally well with hare and rabbit blood; he also found that the fowl produces antipigeon precipitin and the pigeon antifowl, but cross immunization failed in the case of the horse-ass, and goat-sheep.

7. Gay: A Contribution to the Forensic Value of the Musculoprecipitin Test, Jour. Med. Research, 1908, **19**, 219. Clarke: Forensic Value of the Precipitin Test in the Enforcement of Game Laws in California, Univ. of California Publications in Pathology, 1914, **2**, 131.

8. Sutherland: The Applicability to Medicolegal Practice in India of the Biochemical Tests for the Origin of Blood-Stains, Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, 1910, p. 39.

9. Berkeley: The Impossibility of Differentiation Between Monkey Blood and Human Blood by Means of Antisera Derived from Monkeys, Univ. of California Publications in Pathology, 1913, **2**, 105.

3. *Dilution of the Antiserum and of the Suspected Blood.*—Dilution of an antiserum may so weaken certain confusing group precipitins as to cause their practical elimination and still leave the main precipitins strong enough to give a specifically diagnostic reaction under the conditions prescribed for forensic practice. For diluent, Sutherland and Mitra[10] recommend normal serum of the same kind as the antiserum.

It is, of course, in the low blood dilutions that antiserums of high potency give the most marked group reactions. As the dilutions of the bloods of a group are increased, the reaction narrows down more and more, and in high dilutions there may be no question as to its specificness. Hence, determination of the highest dilution in which a suspected blood reacts with a given antiserum, if properly controlled, may solve the problem.

4. *Special Study of Rapidity and Measure of Reaction.*—Hamburger[11] recommends that in the case of a stain that reacts with antiruminant serum, for instance, separate parts of the extract be tested with antigoat, antisheep and antibovine serum in the usual way, and the results carefully noted. The antiserum that gives the most rapid and profuse precipitate supplies the clue.

Systematic detailed studies should be made on the blood of closely related animals in order to determine more fully to what extent differentiation can be made by these and possibly other methods.

Suggestions to the contrary[12] notwithstanding, it is not possible to distinguish between different human races, and far less between individuals, by means of the precipitin test.

10. Sutherland and Mitra: Misleading Reactions Obtained with Precipitating Antisera, and How to Avoid Them, Indian Med. Jour., 1914, **1**, 707.

11. Hamburger: Gerechtlijk onderzoek van bloed en anders lichaamsvochten, Tijdschr. v. strafrecht, 1904, **17**, 82. Zur Differenzierung des Blutes (Eiweiss) biologische verwandter Tierspecies: eine Erweiterung der üblichen serodiagnostischen Methode, Deutsch. med. Wchnschr., 1905, **31**, 212. Here it may be noted that Welsh and Chapman have pointed out that the weight of the precipitate under certain conditions serves to distinguish between related proteins. Welsh and Chapman: On the differentiation of proteins of closely related species by precipitin reaction. Jour. of Hygiene, 1910, **10**, 177.

12. Mallet: The Serum Precipitation Test for the Identification of Blood Stains, Virginia Med. Semimonth., 1903-1904, p. 285; Tr. Med. Soc. Virginia, 1903, 1904, p. 49. Bruck: Die biologische Differenzierung von Affenarten und der menschlichen Rassen durch spezifische Blutreaktion, Berl. Klin. Wchnschr., 1907, **44**, 798.

Epidemics and the Doctor.—It might take a long time for doctors to rid a city of an epidemic, but it would not take a city long to rid itself of a doctor found promoting an epidemic.—*Public Health.*

TRAUMATIC CEREBRAL EDEMA CAUSING LATE SIGNS OF FOCAL CORTICAL IRRITATION

REPORT OF CASE

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History.—A boy, aged 7 years, was brought to the hospital by ambulance, after being struck and rendered unconscious by an automobile while playing in a snow pile, in the evening of Dec. 23, 1917; he was admitted to the service of Prof. William Sharpe.

From the meager history of the accident that could be obtained, the child was unconscious when picked up, frothing at the mouth, and bleeding from the right ear and the nostrils.

Examination.—At the hospital, within an hour after the accident, he was drowsy; although his eyes were open and he would answer rationally when spoken to, he was lying quietly and unconcerned, occasionally moving the extremities. There was a small amount of dry clotted blood in both nares and also in the right external auditory meatus. A hematoma, the size of a half dollar, with a slight superficial laceration in the center, was present over the right parietal eminence without evidence of underlying bone depression. The pupils were moderately dilated and reacted equally to light. There were no evident paralyses of either side of the face or the extremities. The abdominal reflexes were abolished. Patellar reflexes were moderately exaggerated on both sides. No Babinski or Oppenheim reflexes could be elicited. No impairment of sensation could be ascertained. An ophthalmoscopic examination of the eye grounds revealed a moderate dilatation of the retinal vessels without any apparent blurring of the details of the optic disks or their margins. A spinal puncture revealed clear cerebrospinal fluid, the spinal mercurial manometer registering a pressure of 10 mm. (the normal is from 8 to 10); the rectal temperature was 97.8; the pulse, 84; respirations, 20. The patient was then removed to the ward, and the routine expectant palliative treatment instituted.

Fig. 1.—Extensive linear fractures of the right parietal and frontal bones. There is also a linear fracture radiating through the squamous portion of the right temporal into the petrous portion.

Bedside Notes.—December 24, the patient had slept quietly last night, except once when he appeared restless and tried to get out of bed, but soon fell asleep again. The temperature remained at 100 until 5 p. m.; the pulse, 96; respirations, 24. The temperature gradually ascended to 104.6 during the next twenty-four hours. Throughout the day, the patient could be aroused and would answer when called by name, but went to sleep again. He refused nourishment.

Ophthalmoscopic examination by Dr. J. A. Kearney revealed slight general edematous changes blurring both disks equally.

Roentgen examination by Dr. G. W. Welton revealed extensive linear fractures of the right parietal and frontal bones. There was also a linear fracture radiating through the squamous portion of the right temporal into the petrous portion.

December 25, the patient had had a fairly good night with occasional periods of restlessness, but at times he was awake and quiet; he seemed rational. The temperature in the afternoon was 104.6; the pulse, 142; respirations, 30. He was very restless all day.

December 26, the patient had had a very good night. The temperature was 102; the pulse, 104; respirations, 24. He took nourishment very well. He complained of his neck being sore; he was very quiet all day; he called for his mother; he liked the ice bag at the neck. The patellar reflexes were sluggish. The fundi oculi showed no added haziness of the optic disks.

December 27, the patient had had a very comfortable night; he took nourishment as well as on the preceding day; he took a cup of milk in his hand and drank it; once he sat up in bed and played with the electric light; he was rational, and answered all questions. The temperature was 99; the pulse, 96; respirations, 20.

December 28, he had slept well all night. He took nourishment well. He had an orange in the morning, and enjoyed it. He complained of frontal headache in the afternoon. The temperature, pulse and respirations were the same as the day before.

December 29, he had had a very good night. At 7:30 a. m. he had milk with bread; he enjoyed a bath; he was very quiet afterward. The temperature was 99; the pulse, 84; respirations, 20. At 8:30 a. m., one hour later, the patient was reported as having severe spasmodic contractions of the left side of the face, with marked dyspnea and cyanosis. The temperature was 99; the pulse was 144; the respirations were 30.

An examination disclosed besides clonic spasmodic contractions of the left half of face and neck coming on in quick succession, and lasting several minutes, a complete flaccid paralysis of the left arm and leg, fixed eyes wide open, dilated pupils, and complete unconsciousness. It was thought advisable, therefore, to perform an exploratory decompression and drainage over the right cerebral cortex.

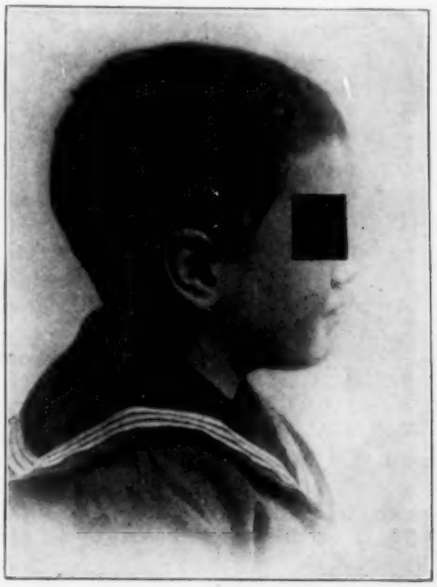

Fig. 2.—Scar of subtemporal decompression.

Operation and Results.—A right subtemporal decompression and drainage were performed. A vertical incision 3½ inches long was made from the temporal attachment at the parietal crest to the root of the zygoma, one-half inch anterior to the external auditory meatus. The temporal fascia was incised and the muscle retracted in the direction of its fibers. The temporal bone revealed no line of fracture. The periosteum was removed and the cranial cavity opened with the Doyen perforator and burr, after which the opening was enlarged with a rongeur. The dura appeared under normal tension, dusky-red, nontransparent, thickened, and difficult to incise. Only a few drops of cerebrospinal fluid escaped through a nick in the dura, showing that there was no general increase in the intracranial pressure, but rather a focalized cortical edema, possibly due to the cortical contusion.

Radiating incisions were made through the dura toward the edges of the bone gap, no subdural clots being encountered. The cortex was edematous and grayish, the cortical vessels were dilated and tortuous. The dura was left open, and two rubber tissue drains were inserted under each angle of the incision and over the cortex. The wound was closed with catgut and fine silk suture.

The patient had slight twitchings of the left side of face, four hours after operation, which soon subsided. The patient became wide awake and conscious. He had full control of the left arm and leg. The reflexes were apparently normal. The temperature, pulse and respirations remained normal throughout convalescence. The patient was discharged well, on the twelfth day after operation.

The child has made weekly visits to the clinic for the past two months. He appears normal in every way, and has gained several pounds in weight.

COMMENT

This case illustrates two important points in the care of patients having brain injuries with or without a cranial fracture. First, as to the diagnosis of the extent of brain injury at the time of the accident, and second, as to the mode of treatment to be pursued after a diagnosis has been reached.

From the foregoing report, it is obvious that the late signs of paralysis and convulsions coming on after a traumatism of the head could have been produced by the same causes, irrespective of the presence of fracture. Therefore, in any head injury, with temporary unconsciousness, even if the patient, after recovering from the initial shock, progresses toward a recovery, the surgeon should be most vigilant lest such signs should develop at a later date, which would warrant immediate surgical measures; the prognosis, in the meantime, is always uncertain. All these injuries should be considered as serious, whether or not the skull is fractured, because considerable damage probably may have been produced to the brain substance or to its membranes. Also, the more remote signs of inflammation of the cerebral tissues should be watched for. Many patients who recover from the immediate effects of an injury to the brain may later develop epilepsy, a changed personality and even dementia itself, whereas in other cases, there is complaint for a long time of headaches, and depressed and excitable conditions.

The latter post-traumatic complications may in a large measure be obviated by the more precise methods of diagnosis now at our command, such as are the measurement of the intracranial pressure at lumbar puncture, and the ophthalmoscopic examination of the fundi of the eyes.

In this particular patient we can infer almost at a glance the probable occurrence of a fracture, most likely including the petrous portion of the right temporal bone, as indicated by the clotted blood at the auditory meatus; also, the possibility of a fracture of the anterior fossa from the presence of the dry blood in the nostrils, although both of these conditions may have been due to local bleeding in these regions. The history leads one to the conclusion that the condition we had to deal with was fracture of the skull, as the patient was said to have been picked up in an unconscious condition, frothing at the mouth, and bleeding from the right ear and nostrils.

The physical examination revealed that the patient had recovered within an hour from the initial unconsciousness, leaving him in a quiet, somewhat drowsy

condition, with exaggeration of the patellar reflexes, moderate dilatation of the pupils, slightly subnormal temperature, and normal pulse and respirations. These signs pointed to the fact that the patient had at least cerebral concussion, possibly a cerebral contusion, and a possible fracture of the skull, of which we were not sure.

We attach no great importance to the small hematoma in the right parietal eminence, although we are inclined to believe that the trauma was received at this point, and an underlying fracture may have occurred; it would thus have involved the vault, radiating then to the base, as it has been shown that from 60 to 70 per cent. of fractures of the vault radiate to the base, and conversely.

Such inferences from the history and the physical signs must be substantiated by more accurate methods of procedure, in order to decide whether there are present definite signs of increased intracranial pressure for which an operation should be immediately performed after the patient has reacted from the primary shock, or whether he should be treated expectantly with rest, quiet, low diet, purges, ice helmet, and sedatives for restlessness and delirium, and carefully observed for subsequent signs of localized cortical irritation or general signs of cerebral compression.

The use of the roentgen ray is an important adjunct in revealing the presence of fracture, but its importance is only secondary to the estimation of the degree of intracranial pressure, whether this is due to hemorrhage or to primary edema.

It is necessary, then, in all patients having head traumatism, in whom there has been more or less disturbance of consciousness from a temporary confusion and giddiness to a partial or complete unconsciousness, that we arrive at an immediate decision as to the amount of intracranial pressure, irrespective of the presence of fracture, by means of the proper use of the spinal mercurial manometer, and by making repeated examinations of the eye grounds. This has been the course of procedure followed in more than 500 cases of brain injuries on the service of Dr. William Sharpe, at the Polyclinic Hospital, with a mortality of only 19 per cent., excluding those patients admitted in a moribund condition, in whose cases no operation was advisable, and in whom the brain injury was merely an incident in the general condition. Only those patients are operated on who have recovered from shock, with a pulse rate below 120, the spinal manometer registering 15 mm. of pressure or over, and the ophthalmoscope revealing partial or complete obscuration of the ocular disks. Less than one third (31 per cent.) of these patients having brain injuries, with or without a fracture of the skull, have shown the varying degrees of high intracranial pressure, and only those have been operated on, with the results noted above.

The patient under discussion showed a pressure of 10 mm. of mercury, which is within normal limits. The cerebrospinal fluid was clear, indicating that no subdural bleeding had occurred. The dilatation of the retinal vessels, without any marked blurring of the optic disks, represents the usual ophthalmoscopic findings, in the majority of so-called cerebral concussion cases, with or without a fracture of the skull, within the first six hours after the accident. Later on, as the patient recovers from the shock, and the intracranial pressure increases, the optic disks undergo a general haziness. If the pressure is still higher, there will be an added obscuration, first of the nasal, subsequently of the temporal halves of the disks and their margins.

On the second and third days after this patient was admitted to the hospital, he presented the usual clinical signs of a case of concussion, as indicated by the occasional period of restlessness, headache, pain in the neck, drowsiness, and the initial rise in temperature. All these signs disappeared within the next forty-eight hours, and the patient was well on his way to recovery. Repeated fundal examinations revealed only a moderate degree of haziness of the disks, but not enough to warrant a lumbar puncture, as the other concomitant signs were gradually disappearing.

Thus, it may be seen that this patient did not show a definite increase in the intracranial pressure, but rather a local edema of the contused brain tissue, causing an irritation extending to the prerolandic area controlling the side of the body that was affected. A similar condition may be produced in cases of brain injury, complicated by a secondary infection, causing a meningitis or a meningo-encephalitis, whether of the acute type or the chronic form with the formation of a definite abscess — cortical or subcortical. Here also, a cranial decompression and drainage is the proper course of procedure.

CONCLUSION

In view of the signs and symptoms that were present in this patient, and their subsequent development requiring an immediate operation, it makes it imperative that patients, in whom, from the history or from the signs present on examination, a brain injury is suspected to have occurred, should have a lumbar puncture performed and repeated ophthalmoscopic examinations of the ocular disks.

Should there be no marked increase in the intracranial pressure nor localized signs of cortical impairment, then the expectant palliative treatment should be instituted, and if in shock, naturally no operation should be performed until the patient has reacted from it.

The prognosis in this class of patients is regarded as most uncertain, and they must always be carefully watched and examined for fear of immediate and future complications. But when these patients are watched carefully and operated on promptly when the symptoms justify operative intervention, the prognosis, as shown in this patient, is excellent.

Butter Substitutes.—As margarins are popularly supposed merely to differ from one another in price and palatability, any substitute fats placed on the market in bulk will command a ready sale. A word of caution on this point seems desirable. It is known that butter is particularly rich in one of the "accessory substances" necessary to healthy metabolism. Drummond and Halliburton in a recent note (Proc. Physiol. Soc., Jour. Physiol, 1917, **51**, 8) have called attention to the fact that this substance is not found indifferently in all margarins. According to them the oleo-oil margarins, which have as a basal fat an oleo-oil prepared from beef fat, can fully replace butter in the dietary. Vegetable oil margarins, on the other hand, which are usually prepared from coconuts, peanuts, etc., are by no means equal to butter and the oleomargarins in nutritive value. Apparently the fat-soluble accessory substance is present in the coconut fibers and absent from the expressed oil. Hence some of the vegetarian suets and lard substances, which are often deodorized coconut oil, or hydrogenated cottonseed oil preparations, are unsatisfactory.—*British Medical Journal.*

ARE ALL THE TUBERCLE BACILLI FOUND IN THE SPUTUM VIRULENT?*

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On account of the lack of conclusive available data on the virulence of tubercle bacilli in the sputum of consumptives, and the tremendous importance of this information for the institution of hygienic measures in preventing and eradicating the disease, it was deemed advisable to investigate this problem. The earlier literature on this subject deals with it pro and con, but is not clear cut and decisive, lacking substantiating experiments. From this literature, however, there are several conspicuous considerations which must be kept in view in performing experiments to determine the virulence of tubercle bacilli. Fraenkel and Baumann[1] found guinea-pigs alone (not rabbits, rats or mice) to be available for revealing differences in pathogenic properties of tubercle bacilli. Marmorek[2] calls attention to the fact that as a criterion of the infectious power of tubercle bacilli it is necessary to note the distribution of the anatomic lesions, and only in a very insignificant manner consider the duration of life.

This investigation was begun, therefore, to determine the range of virulence of tubercle bacilli isolated from the sputum in open cases of pulmonary tuberculosis. Its purpose was not to determine the smallest number of individual tubercle bacilli necessary for causing infection, with a view to producing immunity with them, as was the case in Webb, Gilbert and Gregg's work. On account of the elaborate apparatus and consumption of time necessary to determine the virulence of a large series of cultures by the Barber method, it was deemed satisfactory to use the dilution method, after weighing the amounts of bacilli used, and to count the bacilli by staining them after carefully making the various dilutions. This method had the added advantage of protecting the bacilli from exposure to light, which can not be avoided by the Barber method and which may have an influence on the virulence of the bacilli. To secure absolutely accurate scientific data on the virulence of tubercle bacilli contained in any excreta or body fluids, it would, of course, be advantageous to use the bacilli directly from the material without previous culture, since it is conceivable that there may be bacilli of low virulence or dead bacilli in the material under investigation, which are not taken into consideration because they do not grow as well as the more hardy and virulent types.

There are a number of arbitrary points that must be considered when we speak of virulence, especially of an organism of the type of the tubercle bacillus. It is, of course, known that this term is merely relative. An organism may be highly virulent for one type of animal and yet be avirulent for another. Thus, for example, the human tubercle bacillus is avirulent for the rabbit. This means within reasonable doses (0.1 mg.) and within reasonable time. The guinea-pig was therefore chosen as a suitable experimental animal for determining the virulence of the human tubercle bacilli dealt with in this investigation. An organism avirulent for this highly susceptible animal would certainly not be very pathogenic for man. The rabbit was used merely to determine the type of bacillus, whether human or bovine. Another important fact which should be pointed out at this time is that emphasized by Cocke,[3] that the infection in the human being is due to repeated or prolonged, rather than a single, exposure.

It is also advisable to call attention to the fact, brought out recently by Krause,[4] that death in tuberculosis is due generally to accident. This is especially significant in ruling out duration of life as a factor in determining the virulence of the tubercle bacillus.

RESULTS OF VIRULENCE TESTS

The tubercle bacilli used for the virulence tests were directly cultivated from the sputum by Petroff's method[5] and were usually from one to two months old. No appreciable difference was noted in the virulence of the bacilli taken from the same culture at from one to three months. For the tests, an emulsion was made equivalent to 1 mg. of the moist culture in 1 c.c. of physiologic sodium chlorid solution, so that on examination the bacilli were found at most only in lumps of from two to ten. The emulsion was then diluted with physiologic sodium chlorid solution until 1 c.c. contained 0.1 mg., 0.001, 0.000,0001 and 0.000,000,01 mg. These amounts were then injected into four male guinea-pigs, all of the same size and weighing from 500 to 600 gm. At the end of two months after infection, the guinea-pigs were examined for anatomic involvement and graded from — to ++++, depending on the extent of the involvement. The number of bacilli found per milligram of moist culture was from 5 to 6 billions, so that the 0.000,000,01 mg. dilution contained from fifty to sixty tubercle bacilli.

A total of eighty-two cultures directly isolated from the sputum were thus examined, and all but two of these produced tuberculosis in the guinea-pigs within two months after a subcutaneous injection of 0.000,001 mg. of the moist culture. Of the two negative cultures, one was entirely negative, not even producing systemic tuberculosis in the guinea-pig in 1 mg. dose. Of course this amount produced a local tubercle, as always occurs even with avirulent laboratory strains; but no evidence of disease was ever found beyond the local glands. The other culture produced only a slight tuberculosis in 0.001 mg. amounts. Of the eighty cultures that produced a systemic tuberberculosis (beyond the local glands) in 0.000,001 mg., eleven were not examined below this amount, sixty-two produced systemic tuberculosis in 0.000,000,01 mg. amounts within two months, while seven were negative in this amount. Of the sixty-two which produced systemic tuberculosis in 0.000,000,01 mg. amount, thirty-two gave a ± or + involvement of the retroperitoneal glands, and possibly a slight involvement of the spleen; twenty gave a ++ involvement of the retroperitoneal glands, a well marked and definite involvement of the spleen and possibly of the peritracheal glands; eight gave a +++ involvement of the retroperitoneal glands, and spleen markedly, of the peritracheal glands, of the liver slightly and the lungs slightly, and two gave a ++++

* From the laboratories of the city of Chicago Municipal Tuberculosis Sanitarium.

1. Fraenkel, C., and Baumann, E.: Ztschr. f. Hyg. u. Infectionskrankh., 1906, **54**, 246-261; ibid., 1906, **55**, 327-330.
2. Marmorek, Alexander: Berl. klin. Wchnschr., 1906, **43**, 328-329.
3. Cocke, C. H.: South. Med. Jour., 1917, **10**, 539.
4. Krause, A. K.: Am. Rev. of Tuber., 1917, **1**, 65-82.
5. Petroff, S. A.: Jour. Exper. Med., 1915, **21**, 38-42.

involvement, amounting to an entire massive systemic infection of practically all the important organs. Of the eighty-two cultures examined, eighty were definitely of the human variety, either producing no tuberculosis in the rabbit after the intravenous injection of 0.1 mg., or producing only a miliary tuberculosis of the lungs within two months. One of them was intermediate, causing a tuberculosis of the lungs, kidneys and omentum, but not death, within two months, and the other appeared to be bovine, causing tuberculosis of the lungs, liver and spleen, and death of the rabbit within one month. No relation between the virulence in the rabbit and in guinea-pigs could be noted from the experiments as performed.

The cultures were isolated from fifty-seven far advanced (National Association classification), eighteen moderately advanced, and seven incipient cases. Of the fifty-seven far advanced cases, thirty presented severe constitutional symptoms, and ten of these patients died in the sanatorium within a year; ten presented moderate constitutional symptoms, and one of the patients died within a year, and seventeen presented either slight constitutional symptoms or none at all. Of the eighteen moderately advanced cases, two presented severe symptoms, one of the patients dying within a year, five presented moderate and eleven slight constitutional symptoms or none at all. All seven incipient cases presented only slight constitutional symptoms or none at all. As far as could be observed, there seemed to be no relation between the severity of the disease in man and the virulence of the organism for the guinea-pig. There was just as little relation between the anatomic involvement in man and the virulence for the guinea-pigs.

CONCLUSIONS

The foregoing investigations have revealed that in the majority of open cases of pulmonary tuberculosis, the tubercle bacilli which could be isolated on artificial mediums from the sputum were virulent enough to produce systemic tuberculosis in guinea-pigs, by means of doses as small as 0.000,001 mg.; and that the range of variation of virulence was very small, as was also pointed out by Gilbert and Gregg,[6] who found it to lie between ten and 120 bacilli. If the virulence of the bacilli as cultivated on artificial mediums is a direct expression of their virulence in the sputum, there is only one conclusion to be drawn from the foregoing findings, as viewed from a practical standpoint, and that is, that in open cases of pulmonary tuberculosis the tubercle bacilli discharged by droplet or by expectoration, when still uninfluenced by drying and light, are a danger to mankind, through direct transmission at least. In applying these findings to mankind, there was found in the literature only one reference which would indicate the relation between the number of bacilli of the same culture necessary to infect a guinea-pig and to infect man. These observations were made by Webb and Gilbert,[7] who found that a culture of human tubercle bacilli, sufficiently virulent to infect a guinea-pig when ten bacilli were used, was also capable of infecting a child in practically the same dose. It seems justifiable, therefore, to conclude that the tubercle bacilli found in the sputum of patients in open cases of pulmonary tuberculosis (provided the bacilli capable of artificial cultivation are a true index of those existing in the native sputum) vary only slightly in virulence for guinea-pigs, and are for practical purposes nearly all pathogenic. That is, in 97 per cent. of the cases, they will infect a child, as may be deduced from Webb and Gilbert's observations, in a dose of less than one-millionth milligram. These experiments also seem to lay special emphasis on the examination of the sputum of men in military service or about to enter it.

6. Gilbert, G. B., and Gregg, H.: Med. Rec., New York, 1915, **88**, 208.

7. Webb, B., and Gilbert, G. B.: Immunity in Tuberculosis, THE JOURNAL A. M. A., Sept. 26, 1914, pp. 1098-1104.

TREATMENT OF DIABETES FROM THE GENERAL PRACTITIONER'S STANDPOINT

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In spite of the recent important advances made in diabetic treatment by the studies of Allen, Joslin, Mosenthal and others, our profession at large has failed to profit in a corresponding degree. The reasons are not difficult to ascertain. Success in the treatment of diabetes lies in the smooth coordination of clinical experience in the disease with a practical system of diabetic dietetics and accurate chemical laboratory methods. Neither the general practitioner nor, indeed, the general internist can be expected to meet these severe requirements, as both treat too few diabetics at any given time to permit of elaborate dietetic management. The result is that the treatment of diabetes, at present, is carried out successfully by a relatively few physicians who have the help of a specially modified institutional system. However, the management of this difficult disease must of necessity still be largely conducted by the general practitioner and internist. No very definite attempt has been made to adapt the modern treatment to these needs.

This unsatisfactory state of affairs has been impressed on me in teaching physicians at the New York Post-Graduate Medical School. Accordingly, a simplified scheme has been worked out to fill this general need. It has been used sufficiently to demonstrate its utility in the hands of physicians with little previous experience with diabetic patients. My purpose in this article is to describe the principles of this plan together with other points of practical importance to the general practitioner. This plan of treatment, in which fixed dietaries are introduced, is by no means ideal, but is serves a very definite purpose. Whenever possible it should be replaced by more specialized dietetic and laboratory methods.

FALLACIES IN DIABETIC TREATMENT

Correction of poor treatment is a necessary adjunct to the introduction of better treatment. General carelessness may be mentioned first. Diabetes is eminently chronic. Many patients apparently get along well over long periods of time with sugar in the urine. The case is allowed so to continue until irreparable complications or unconquerable acidosis develops. It cannot be too forcibly emphasized that the only danger-free existence for the average diabetic is a sugar-free existence.

Allowing the patients more food than is absolutely necessary is always inadvisable. It must be remembered that both protein and fat, in excess, as well as

carbohydrates may cause lowering of the tolerance and eventually glycosuria and acidosis. According to my studies,[1] 50 per cent. or more of protein is converted into glucose in the diabetic organism. By stimulating protein breakdown, fat may lead to increased sugar production. For the same reason the use of special "diabetic foods" containing large amounts of protein is inadvisable, as I have previously pointed out.[2] In spite of various publications to the contrary, the unlimited use of gluten bread as a "good diabetic food" is still recommended by some physicians. Its use is undoubtedly responsible for the death of many diabetics. Gluten breads contain large amounts of protein and frequently carbohydrate, as well.

The "oatmeal cure" is still occasionally used. The virtue of the oatmeal diet seems to be chiefly in the fact that the monotony of such food causes less caloric intake with corresponding improvement. The use of oatmeal in modern treatment is restricted to certain special cases, as exemplified below.

The *sudden* change from an unrestricted diet to one containing large amounts of protein and fat but limited carbohydrates is one of the most dangerous practices still encountered in diabetic treatment. The results may be an outbreak of coma as a result of destroying the balance between the fats and the carbohydrates of the diet.

Many diabetics break their diet because of the unreasonable restriction and lack of daily variation in their dietary prescriptions.

Fasting resembles digitalis as a therapeutic agent in being an excellent remedy only in skilled hands. By its means the patient is quickly rid of sugar; but such treatment is merely a useless hardship if the subsequent diet is not properly modified to maintain the patient permanently without glycosuria. Many physicians "treat the case" rather than aim to give the patient a systematic education with the aim of teaching him to live free of sugar.

PRINCIPLES OF MODERN DIABETIC TREATMENT

The object in the treatment of diabetes is to render the urine sugar free by fasting or by the employment of low caloric diets. This is done, for experience has taught that diabetics made permanently sugar free become rapidly relieved of symptoms and curable complications, and gain strength and resistance. The carbohydrate tolerance is usually increased by this treatment so that frequently increased amounts of starchy food can be assimilated with benefit. Acidosis is best combated by the same means in all but exceptional cases.

Hygienic Treatment.—The great emphasis necessarily placed on the diet in the treatment of diabetes has made many forgetful of the great importance of hygiene in the disease. Mental worry and strain should be excluded as much as possible, for I have seen diabetes apparently develop solely from this cause. Daily exercise in the fresh air should be prescribed for all but the very feeble. This is very important. Fresh air at work and during sleep, a rest in the middle of the day, and a change to a more hygienic occupation are other measures.

Classification of Diabetic Patients.—As the treatment of diabetes varies immensely with the severity of the case, it is important practically to divide diabetics into two groups as originally proposed by Joslin.

Group 1 comprises the light, uncomplicated cases—those showing, for example, only a few grams of sugar in the urine on an unrestricted diet. Such patients show slight clinical symptoms.

Group 2 comprises all severe, long-standing, complicated and acidosis cases; also cases with infection, and cases in the obese and elderly.

TABLE 1.—DR. JOSLIN'S DIABETIC CARD

FOODS ARRANGED APPROXIMATELY ACCORDING TO PERCENTAGE OF CARBOHYDRATES

	5 per cent.*	10 per cent.*	15 per cent.	20 per cent.
VEGETABLES (fresh or canned)	Lettuce Cucumbers Spinach Asparagus Rhubarb Endive Marrow Sorrel Sauerkraut Beet greens Dandelion greens Swiss chard Celery Tomatoes Brussels sprouts Watercress Sea kale Okra Cauliflower Eggplant Cabbage Radishes Leeks String beans Broccoli	Pumpkin Turnip Kohlrabi Squash Beets Carrots Onions Mushrooms	Green peas Artichokes Parsnips Canned lima beans	Potatoes Shell beans Baked beans Green corn Boiled rice Boiled macaroni
FRUITS	Ripe Olives (20% fat) Grapefruit	Lemons Oranges Cranberries Strawberries Blackberries Gooseberries Peaches Pineapple Watermelon	Apples Pears Apricots Blueberries Cherries Currants Raspberries Huckleberries	Plums Bananas Prunes
Nuts	Butternuts Pignolias	Brazil nuts Bk. walnuts Hickory nuts Pecans Filberts	Almonds Wal'ts(Eng.) Beechnuts Pistachios Pine nuts	Peanuts 40 per cent. Chestnuts
Misc.	Unsweetened and unspiced pickle; clams; oysters; scallops; liver; fish roe			

* Reckon available carbohydrates in vegetables of 5 per cent. group as 3 per cent., of 10 per cent. group as 6 per cent.

(30 gm. 1 oz.) Contain Approximately	Carbohydrates Gm.	Protein Gm.	Fat Gm.	Calories
Oatmeal, dry wgt.	20	5	2	120
Cream, 40 per cent.	1	1	12	120
Cream, 20 per cent.	1	1	6	60
Milk	1.5	1	1	20
Brazil nuts	2	5	20	210
Oysters, six	4	6	1	50
Meat (uncooked, lean)	0	6	3	50
Meat (cooked, lean)	0	8	5	75
Bacon	0	5	15	155
Egg (one)	0	6	6	75
Vegetables 5 and 10% group	1 or 2	0.5	0	6 or 10
Potato	6	1	0	25
Bread	18	3	0	90
Butter	0	0	25	225
Fish, cod, haddock (cooked)	0	6	0	20
Broth	0	0.7	0	3
Small orange or half grapefruit	10	0	0	40

EQUIVALENTS

1 gm. protein	4 calories
1 gm. carbohydrate	4 calories
1 gm. fat	9 calories
1 gm. alcohol	7 calories
1 kg.	2⅕ pounds
30 gm. or c.c.	1 ounce

Treatment of Light Cases (Group 1).—The patient is assisted to select from the Joslin food card (Table 1) a simplified diet corresponding as nearly as possible to his present diet without change. The patient is directed to weigh or measure all articles of his diet for the first few days of treatment. The various articles of food, for the sake of clearness, should be recorded in columns in a special notebook.

Instructions are given how to perform the qualitative Benedict test[3] for glucose in the urine. This test

1. Janney, N. W., and Co-Workers: Jour. Biol. Chem., 1915, **20**, 321; **22**, 203; **23**, 77.
2. Janney, N. W.: Glucose Formation from Protein in Diabetes, Arch. Int. Med., November, 1916, p. 584.
3. Benedict, S. R.: The Detection and Estimation of Glucose in Urine, THE JOURNAL A. M. A., Oct. 7, 1911, p. 1193.

should be made by the patient himself on a twenty-four hour specimen or large mixed sample of urine. Several twenty-four hour specimens of urine should be tested quantitatively for glucose after the diet is being properly recorded.

The physician now calculates the approximate amount of carbohydrate in the diet, paying especial attention to the articles rich in carbohydrate, such as bread, milk, vegetables and fruit. There seems to exist an unreasonable objection on the part of the profession to accuracy in dietetic prescriptions. The calculations here suggested do not require over fifteen minutes daily. Protein and fatty foods are not calculated, but should be recorded for the patient's own instruction.

TABLE 2.—NEW DIET IN TREATMENT OF LIGHT CASES

Article	Amount Gm.	Amount Oz.	CH Gm.
10 per cent. vegetables	240	8	14
20 per cent. vegetables	120	4	24
Bread	60	2	36
Orange or grapefruit*	150	5	12
Total			86

* Edible portion.

The next step is to devise the new diet for the patient. This prescription should contain only about one half to two thirds of the amount of carbohydrate previously taken. Thus, if 150 gm. of carbohydrate were found to cause a few grams of sugar to be excreted in the urine, a maximum of 100 gm. of carbohydrate distributed somewhat as indicated in Table 2 can be ordered. The difference between this total and the 100 gm. of carbohydrate prescribed is allowed for by the 5 per cent. of vegetables, the cream, the cheese, etc., included in the general list.

TABLE 3.—GENERAL DIABETIC DIET LIST

FOODS PERMITTED:

Soups—Clear meat broths, oxtail, green turtle, vegetable soup (use only permissible vegetables). Casein, Hepco or Lister flour can be used for thickening soups.

Meats—All kinds of meats, fresh, cured or smoked, except liver. All meat must be prepared without flour or bread crumbs.

Eggs—Eggs in any form prepared without milk, flour or sweetening (sugar, jam, etc.).

Butter—Butter, oils, lard, crisco, in moderate amounts.

Cheese—All kinds of cheese.

Fish—All kinds of fish, including canned salmon and sardines. Shellfish (oysters, clams, lobsters, scallops, crab, etc.) in small amounts.

Vegetables (containing 5 per cent. of carbohydrate)—Greens, spinach, beet tops, string beans, Brussels sprouts, asparagus, lettuce, endive, cucumbers, radishes, celery, cabbage, tomatoes, cauliflower, watercress, eggplant, kohlrabi, sour pickles.

Desserts—Gelatin jellies (flavored with sour white wine, brandy or coffee), custards and ice cream made with eggs and cream only, flavored with a little vanilla. All sweetening to be done with saccharin or crystallose (do not use sugar or milk in desserts).

Beverages—Tea or coffee (without sugar or milk), cream and saccharin may be used; claret; burgundy; sour white wine; whisky in moderate amounts; Vichy and water. Cream to be used in coffee and tea, or as desired in cooking.

Condiments—Pepper, salt, mustard, oil, vinegar, nutmeg, capers, cinnamon, paprika, bay leaves.

Special—Nuts: butternuts, pecan nuts, Brazil nuts. Lister and Hepco flour.

AVOID:

All articles not enumerated above. Patent diabetic foods in general. Sugar in any form. Bread, biscuits, cake of any kind, toast, crackers. All cereals (rice, oatmeal, cornmeal, sago, tapioca, hominy, etc.). Macaroni, vermicelli, spaghetti. Potatoes and all vegetables not listed above. All fruits, fresh, dried or preserved. Jellies, pastries, puddings, ice cream. Sauces and gravies thickened with flour. Catsup, chili sauce. Milk, ale, stout, porter, beer, cider, all sweet wines, port wines, liqueurs, sparkling wines and syrups.

Less but not more than the prescribed amount of food may be taken. The noncarbohydrate food of the diet need not be especially prescribed except that the articles should be chosen from the general diabetic list (Table 3); that as little food as is necessary to maintain weight be eaten, and that fats never be used in excess. The final diet consists of known amounts of food rich in carbohydrates in addition to the general diabetic list. The weighing of the food may cease as soon as the patient has learned to estimate accurately the portions allowed.

The patient should become sugar free within one week on the new diet, if the work has been done correctly. This fact he establishes by his own urinary examinations controlled by the physician's. Later on the test should be made twice weekly, but never entirely omitted. If desired, the sugar can be immediately removed from the urine by a fast; but its gradual clearing up represents no danger to the patient, to whom this process is far more agreeable and is followed by as good results.

In many of these light cases the patients become sugar free by simply limiting the carbohydrate food without weighing. To this common procedure there are various objections. The greatest is that the training of the patient to dietetic accuracy is of fundamental importance to successful treatment. Again, if the upper limit of the carbohydrate content of the diet is ascertained by the patient's weighing and calculating the food, frequently certain amounts of bread, a little milk, fruit, etc., may be added with impunity, and the final diet be made much more endurable and agreeable.

Treatment of Severe Cases (Group 2).—Here acidosis or the danger thereof is present. It is most advisable to order no sudden change in diet at the start, for in certain cases even fasting if abruptly begun may cause acidosis to develop. To combat this condition the diet should be gradually reduced until a fast is finally instituted. Fasting is inadvisable in the elderly, and in nephritic, exophthalmic goiter and septic cases. The latter group of patients may fail to become sugar free even after prolonged abstinence from food. Here the use of restricted diets is indicated.

TABLE 4.—LIQUID DIET

WATER, TEA AND COFFEE—Without sugar, cream or milk, when desired. Crystallose or saccharin can be used for sweetening.

CHICKEN OR MEAT BROTH—May be taken every two hours. The broth should be clear, and not oversalted.

WHISKY—From 1 to 2 ounces can be taken for weakness. Do not remain in bed, but lie down if necessary.

1. The patient is trained to weigh and record the food without any radical change of diet at the beginning. The diet is simplified as before by omission of all complicated dishes and desserts, articles being chosen from the Joslin diet card.

The twenty-four hour urine specimens should be regularly collected and examined qualitatively and quantitatively[4] for glucose, and qualitatively for acetone, diacetic acid, and albumin. The patient's weight should be regularly recorded every second day. Marriott's alveolar carbon dioxid test may be carried out with advantage.

2. The fats are reduced by the omission of butter, lard, oil, cream, bacon, large amounts of cheese and meat, and all fried or greasy articles of food.

3. After the fatty foods have been omitted for a day or two, the chief protein foods in the diet are halved daily until none are taken. Such foods are meat, fowl, fish, eggs, milk and cheese.

4. The carbohydrate food in the diet is halved daily until fasting has been instituted. The patient fasts

4. A simplified method for performing the Benedict quantitative glucose test is described in Joslin, E. P.: Treatment of Diabetes Mellitus, New York, 1917, p. 180, to which reference may be made for further details of diabetic treatment.

until sugar free for two days. The maximum duration of the fast is four days. The liquid diabetic diet is used (Table 4).

5. After the patient has been sugar free for two days, the fast is broken with the first diabetic diet, D_1 (Table 5), which supplies: carbohydrates, 12 gm.; protein, 53 gm.; fat, 22 gm.; calories, 450. If there has been no return of sugar on this diet, the second diabetic diet, D_2 (Table 6), is prescribed, which supplies: carbohydrate, 16 gm.; protein, 62 gm.; fat, 43 gm.; calories, 700. This may be given from a few days to a week or even longer. Then a trial is made with the third diabetic diet, D_3 (Table 7), which supplies: carbohydrate, 25 gm.; protein, 69 gm.; fat, 68 gm.; calories, 1,000. Finally, the fourth diabetic diet, D_4 (Table 8), may be used, which supplies: carbohydrate, 53 gm.; protein, 73 gm.; fat, 100 gm.; calories, 1,400.

TABLE 5.—DIABETIC DIET 1

BREAKFAST—	
Eggs, 2	
Vegetables, 5 per cent.	90 gm. = 3 oz.
Tea or coffee without sugar, milk or cream	
DINNER—	
Clear meat or chicken broth, fat skimmed off	1 cup
Lean round steak or lean chicken	60 gm. = 2 oz.
Vegetables, 5 per cent.	120 gm. = 4 oz.
4 P. M., OR AT BEDTIME—	
Clear meat or chicken broth, fat skimmed off	1 cup
SUPPER—	
Lean meat, fresh fish or lean chicken	60 gm. = 2 oz.
Vegetables, 5 per cent.	180 gm. = 6 oz.
Tea or coffee without sugar, milk or cream	

Approximate Totals—

Carbohydrates	Protein	Fat	Calories
12 gm.	53 gm.	22 gm.	450

TABLE 6.—DIABETIC DIET 2

BREAKFAST—	
Eggs, 2	
Vegetables, 5 per cent.	90 gm. = 3 oz.
Tea or coffee without sugar	
Milk	60 gm. = 2 oz.
DINNER—	
Clear meat or chicken broth, fat skimmed off	1 cup
Lean meat, fresh fish or lean chicken	90 gm. = 3 oz.
Vegetables, 5 per cent.	180 gm. = 6 oz.
Butter	10 gm. = ⅓ oz.
4 P. M., OR AT BEDTIME—	
Clear meat or chicken broth, fat skimmed off	1 cup
SUPPER—	
Lean meat, fresh fish or lean chicken	90 gm. = 3 oz.
Vegetables, 5 per cent.	150 gm. = 5 oz.
Tea or coffee without sugar	

Approximate Totals—

Carbohydrates	Protein	Fat	Calories
16 gm.	62 gm.	43 gm.	700

TABLE 7.—DIABETIC DIET 3

BREAKFAST—	
Eggs, 2	
Grapefruit or orange	90 gm. = 3 oz.
Vegetables, 5 per cent.	90 gm. = 3 oz.
Coffee or tea without sugar, cream or milk	
DINNER—	
Clear meat or chicken broth, fat skimmed off	1 cup
Lean meat, fresh fish or lean chicken	90 gm. = 3 oz.
Vegetables, 5 per cent.	150 gm. = 5 oz.
Vegetables, 10 per cent.	90 gm. = 3 oz.
Butter	15 gm. = ½ oz.
Cream cheese	30 gm. = 1 oz.
SUPPER—	
Egg, 1	
Lean meat, fresh fish or lean chicken	60 gm. = 2 oz.
Vegetables, 5 per cent.	150 gm. = 5 oz.
Butter	15 gm. = ½ oz.

Approximate Totals—

Carbohydrates	Protein	Fat	Calories
25 gm.	69 gm.	68 gm.	1,000

TABLE 8.—DIABETIC DIET 4

BREAKFAST—	
Eggs, 2	
Vegetables, 5 per cent.	90 gm. = 3 oz.
Orange or grapefruit	150 gm. = 5 oz.
Tea or coffee without sugar	
Milk	100 gm. = 3 oz.
DINNER—	
Lean meat, fresh fish or lean chicken	90 gm. = 3 oz.
Vegetables, 10 per cent.	120 gm. = 4 oz.
Vegetables, 20 per cent.	90 gm. = 3 oz.
Butter	30 gm. = 1 oz.
SUPPER—	
Lean meat, fresh fish or lean chicken	90 gm. = 3 oz.
Vegetables, 10 per cent.	120 gm. = 4 oz.
Butter	30 gm. = 1 oz.
Cream cheese	30 gm. = 1 oz.

Approximate Totals—

Carbohydrates	Protein	Fat	Calories
53 gm.	73 gm.	100 gm.	1,400

The butter in this diet can be used in the cooking. Olive oil (for salad dressing) may be substituted for it in part.

6. Repeated Fasting: If the patient still has glycosuria after breaking the initial fast by the D_1 diet for two days, he should fast again a maximum of three days and then take the D_1 diet again for three days, using thrice-washed 5 per cent. vegetables.[5] If the urine still shows sugar, a repetition of the fast, this time of two days' duration, followed by the D_1 diet with the thrice washed vegetables for four days, causes the glycosuria to vanish in nearly all cases.

When on this treatment the patient has been free of sugar for two days, the diet may be gradually increased under the fifth general scheme, but one should proceed very slowly.

7. Increasing the Diet: Even diets D_3 and D_4 are usually insufficient permanently to maintain weight and strength. As a general rule, patients should undergo treatment by fasting and very low dieting not longer than a period of three weeks' duration. After an interval varying with the severity of the case, attempts should be made gradually to increase the diet. In many cases the carbohydrates can be greatly increased if the fats are kept low, which also guards against acidosis. Many diabetics are held for too long a time to an overrestriction of carbohydrates, and do not do well in consequence.

Further increase in the foods may be made as follows: Carbohydrates may be added very gradually by (1) the substitution of 15 and 20 per cent. vegetables for the 5 and 10 per cent. varieties; (2) the giving of fruit; (3) the addition of small amounts of bread, and (4) the addition of oatmeal. Protein may be increased by the addition of eggs, meat, fish, milk or cheese; fats, by the addition of butter, cream, bacon or olive oil. It is usually more advisable to use cream in diabetes than milk, because of the increased caloric value and slightly lower carbohydrate content. Milk can be employed in dispensary work and in cases of high tolerance. By the addition of cheese and nuts to the diet, fats are introduced as well as protein.

8. Reappearance of sugar in the urine is the signal for fasting until sugar free, if there be no contraindication, and a lower diet containing but one half to two thirds of the carbohydrate.

Calculation of the Calories.—By the use of scales and the diet card, it is possible to calculate approximately the calories in a given diet. Thirty calories per kilogram or 2,100 calories for the average weight of 70 kg. should, in the opinion of Dr. F. H. Allen and myself, be the maximal adult diabetic ration. The caloric calculations can usually be avoided in general practice by (1) strict adherence to the diets, including daily weighing and recording of the food, and (2) careful observation of the patient's weight and general condition. As soon as the permanent diet on which the patient remains free of glycosuria and maintains body weight has been attained, the weighing of food

5. The vegetables are cleaned, cut up fine and soaked in cold water. They are then strained and tied up loosely in a piece of cheesecloth sufficiently large to permit the vegetables to swell without sticking together. They are placed in a saucepan containing a large quantity of cold water, and brought to the boiling point, at which temperature they are maintained for from three to five minutes. The water is then poured off, replaced with fresh water, and the vegetables are again boiled for the same length of time. This process is again repeated. The vegetables will keep for several days in cold storage, and may be reheated as desired.

can usually be dispensed with, and domestic measures, such as cream pitchers marked for the amount allowed, can be substituted.

Detection and Treatment of Acidosis.—The tests recommended as a routine measure for the detection and estimation of the degree of acidosis by the general practitioner are but three in number: (1) the ferric chlorid test[6] for diacetic acid; (2) the sodium nitroprussid test[7] for acetone, and (3) the Marriott quantitative method[8] for the determination of the alveolar carbon dioxid.

The acetone test really represents a more delicate index of the presence of diacetic acid than does the ferric chlorid reaction. A positive ferric chlorid test should lead to a Marriott carbon dioxid estimation. This test should be at the command of every one treating diabetics. The apparatus can be obtained from the Hynson, Westcott and Dunning Company, Baltimore (New York offices at 150 Nassau Street) for $5. The technic can be learned in a few minutes, and the results are most useful. When the tension of the alveolar carbon dioxid is normal, the reading of 45 will be obtained. Readings between 30 and 40 indicate a mild acidosis, while below 30 the case is more serious. Extreme values of 10 and 15 have been obtained in diabetic coma.

The effort should be made to render the urine free of sugar, and the qualitative as well as the quantitative acidosis tests negative. The ferric chlorid and acetone tests remain positive as long as the faintest trace of the acetone bodies is present. It must also be remembered that when the urine is kept sugar free, the acidosis usually clears up if given a little time. Too great a curtailment of the diet should not, therefore, be ordered on account of a mild ferric chlorid or acetone reaction. Considerable experience is necessary in applying the results of the acidosis methods to the treatment in a given case.

Coma and Its Treatment.—The early recognition of impending coma is of the utmost importance. On being called in consultation to see a diabetic who is said to be merely "not doing well," I have only too frequently found the patient, though conscious, bordering on coma. One of the earliest signs is a peculiar change in the facial expression. The patient presents the anxious appearance of one gravely ill. Quite a number of slight signs, if observed in time, may put the physician on his guard. Such are undue drowsiness, excitement, sudden failing of the appetite, nausea, headache, apparently causeless pains in various parts of the body, dyspnea or hyperpnea. It should be borne in mind that trivial factors may cause a predisposed patient to go into coma. Among these may be mentioned the pulling of a tooth, a tonsillectomy, and a severe nervous shock.

Treatment, if begun in time, may lead to recovery. One should avoid, if possible, alarming the patient. He should be kept *warmly* covered in bed. If the state of his stomach permits, he may be allowed to drink 4 ounces of hot liquid every fifteen minutes to half an hour, hot broth, tea, coffee and water being permissible. The bowels should be emptied immediately by an enema. Catharsis should be avoided. From 300 to 500 c.c. of hot physiologic sodium chlorid solution should be given by enteroclysis after the enema has been expelled. This should be followed with 500 c.c. of additional physiologic sodium chlorid solution by the drip method, once during six hours. If physiologic sodium chlorid solution is not retained, water should be used. It is essential to introduce 4,000 c.c. of liquid during the first twenty-four hours. Therefore if a sufficient quantity is not being retained by mouth and bowel, 700 c.c. of physiologic sodium chlorid solution should be given intravenously. A frequent mistake is to postpone the intravenous infusion until the patient is moribund. Given early, it may save life.

Diet.—Preferably only the liquids mentioned should be given, and from 30 to 40 gm. of carbohydrate in the form of the juice of three to four oranges for the twenty-four hours.

Medical Treatment.—Occasionally codein may be necessary to control vomiting and pain. Caffein may be given to the drowsy patient as a cardiac stimulant. Such cardiac stimulants as strophanthin, 1/100 grain, are frequently indicated and forgotten in the excitement.

Alkalis in Acidosis.—The treatment as outlined is seen to be purely eliminative and supportive without the use of sodium bicarbonate. Views of even the best authorities are divided at present on the advisability of using alkalis. A final opinion as to the utility or uselessness of alkalis had best be reserved until the ultimate cause of diabetic coma is elucidated. Certainly the employment of large amounts of alkalis does much harm on account of the danger of upsetting the stomach, withdrawal of liquids from the body, and, in the case of intravenous introduction, the possibility of causing collapse. It has never been proved that the alkali treatment is beneficial even when small doses are administered. Indeed, a series of fifteen cases[9] with recovery from alarming acidosis or coma without the use of alkali has been reported.

STUDY OF THE BLOOD IN DIABETES

Much information can be gained by a study of the diabetic blood, which should be undertaken whenever possible. The blood methods used in diabetes are not emphasized in this article for the reason that the general practitioner frequently finds difficulty in having laboratory studies made, because of the lack of convenient first-class facilities and the expense. It is very advisable, however, to have blood sugar estimations made at intervals, for the height of the blood sugar is usually an indication of the severity of the disease as well as a gage of the effect of treatment. Normal blood sugar values range from 0.085 to 0.11 per cent., while in diabetes values up to from 0.20 to 0.40 per cent. and even higher are obtained. I have used the Epstein modification[10] of the Lewis-Benedict method with satisfaction. A few drops of blood from the finger tip is sufficient for a blood sugar determination.

In the treatment of acidosis patients too ill for the application of the Marriott alveolar carbon dioxid technic, a few cubic centimeters of blood may be with-

6. To about 10 c.c. of urine, a few drops of 10 per cent. ferric chlorid solution (aqueous) are carefully added. A precipitate of ferric phosphate may form first, but on addition of a few more drops, it dissolves. A Burgundy-red color indicates the presence of diacetic acid, the depth of the color being an index to the amount of the acid present.

7. A few crystals of sodium nitroprussid are dissolved in a small amount of distilled water, 5 c.c. of the urine added, and the mixture rendered acid with a few drops of glacial acetic acid. This is stratified with ammonium hydroxid. A distinct purple appears at the point of contact, the width of the band depending on the amount of acetone in the urine.

8. Marriott, W. M.: The Determination of Alveolar Carbon Dioxid Tension by a Simple Method, THE JOURNAL A. M. A., May 20, 1916, p. 1594.

9. Joslin, E. P.: Treatment of Diabetes Mellitus, New York, 1917, p. 389.

10. Epstein, A. A.: An Accurate Microchemical Method of Estimating Sugar in the Blood, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1667.

drawn from the vein for a more careful study by the accurate Van Slyke method[11] for determining the carbon dioxid of the plasma.

TREATMENT OF OTHER COMPLICATIONS

Nephritis. — In acidosis cases, slight amounts of albumin and hyaline casts are frequently found in the urine. After the patient becomes sugar free, this condition usually improves. Actual nephritis is not uncommon. In such cases, fasting should be avoided, and the urine should be rendered sugar free by moderate reduction of the carbohydrate and the total calories. Only in uremic cases or in cases in which a blood urea determination proves nitrogen retention to be present should the protein of the diet be unduly curtailed. Nephritis is no contraindication to dietetic diabetic treatment, and improvement of both conditions is the rule with judicious management. Edema of non-nephritic origin is common in diabetic patients on low diets containing much salt. It may also be caused by the taking of large amounts of soda. Limitation of salt, omission of sodium bicarbonate, and sometimes restriction of the liquid intake relieve this condition.

Skin.—Great caution to avoid even the tiniest break in the contiguity of the skin is necessary. Daily bathing and the liberal use of talcum powder are indicated.

Pruritis Vulvae.—This usually clears up as soon as the urine is sugar free, if it is not dependent on some local cause.

Furuncles.—These are frequent in diabetes. The old warning to examine the urine in every case of boils is still sometimes neglected. Aside from surgery, furuncles may be treated locally by a 3 to 5 per cent. ammoniated mercury ointment with white petrolatum. A daily bath should be ordered, followed by a boric acid sponge over the entire body, to prevent extension of the infection.

Diabetic Gangrene. — This condition is the end-result of an occlusive angiitis. Prodromal symptoms include numbness and chilliness of the extremities, and intermitent pains lasting frequently for years. In this condition hot foot-baths, massage, short walks and elevation of the feet while at rest should be prescribed. Moist, hot compresses applied for brief intervals once or twice daily are helpful in relieving pain. The use of salicylates may lead to the appearance of a positive ferric chlorid reaction in the urine, when no acidosis is actually present. If actual gangrene develops, a surgeon should be called at once.

Sepsis.—It is sometimes difficult as well as injudicious to free a septic patient of sugar. Restricted diets may be badly borne. Supportive and stimulative measures may be required until improvement permits stricter treatment.

Pregnancy and Diabetes.—A small amount of glucose is not uncommonly found in the urine of pregnant women. In such cases the carbohydrate should be limited and special care be generally employed. Marked clinical symptoms of diabetes had best be regarded by the general practitioner as an indication for an early abortion, though in expert hands cases are now carried through successfully to confinement.

DIABETES IN CHILDREN

Children are especially liable to acidosis. One should be careful never to permit an unlimited amount of fat in the diet, and to restrict fatty foods during the minor illnesses to which children are susceptible. It should be remembered, however, that on account of growth about double the amount of food required by adults must be given to children. Happily, the life of diabetic children is becoming increasingly prolonged under modern treatment. One of my little patients has completed her eighth year, diabetes beginning at 5.

33 East Sixty-Third Street.

11. Van Slyke, D. D.: Jour. Biol. Chem., 1917, **30**, 289.

END-RESULTS IN THE PROSTATECTOMIZED PATIENT: A COMPARATIVE ANALYSIS

BASED ON ONE HUNDRED AND TEN CASES (FIFTY-FIVE SUPRAPUBIC, FIFTY-FIVE PERINEAL)*

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ST. LOUIS

My natural interest, as a urologist, in the life of the prostatectomized patient after complete operative convalescence, particularly as it involved the several important functions subjected to surgical assault, prompted me, in 1917, to write to a considerable number of general practitioners for information of those of their patients on whom a prostatectomy had been done. I enclosed a printed questionnaire covering the following points:

When was operation performed?
Age of patient at operation.
Suprapubic or perineal?
Did wound heal promptly?
If urinary fistula resulted, how long was it in healing?
Present frequency of urination: (1) day; (2) night.
Has patient full control of bladder?
Has patient incontinence? Complete or partial?
Cystitis?
Pain: Connected with Urination? Independent of Urination? Location.
Amount of residual urine.
What force to stream?
Effect of operation on sexual power.
Increased, lessened or unchanged?
Was there stricture of urethra following operation?
Is urine clear?
Has there been stone formation since operation?
Effect of operation on patient's general health.

I chose the family physician as the source of my information because I believed he would be in closer touch with prostatectomized patients than the genito-urinary surgeon. When we have done the prostatectomy and returned the patient to his physician, we usually lose sight of him; but the continued and more intimate relationship between family physician and patient permits the general practitioner to pass accurate and unbiased judgment on the end-results of surgical procedures. Hence, I feel sure that the figures I am about to present represent more reliable conclusions than if they were based on the reports of the men doing the work. Fully to know a person, one must "summer and winter" with him. The family physician does this with his patients. The specialist does not.

The employment of a printed questionnaire secured uniformity of information.

* Read before the St. Louis Medical Society, March 9, 1918.

COMPARISON OF THE TWO OPERATIVE PROCEDURES

Curiously enough, on the final balancing of my returns, I found that I had reports on fifty-five cases of suprapubic prostatectomy, and fifty-five in which the perineal operation had been performed. I was not so much struck by this exact balance of choice of operative procedure as I was by the fact that the perineal operation was still in large vogue. While it is true that in recent years the suprapubic operation has attracted by far the wider attention in the literature of prostatectomy, yet by glancing at the accompanying chronological chart, we may readily see that there is not the numerical disproportion between the two operations which most of us held to be the case. Even as late as 1916, as shown by the chart, the perineal was two thirds as popular as the suprapubic operation.

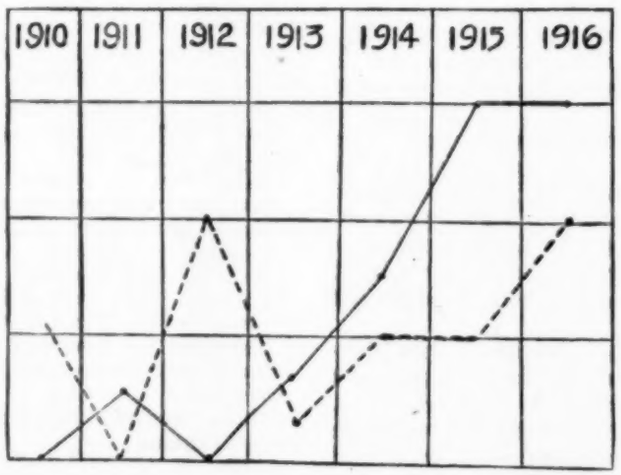
The fairness of the conclusions reached after a comparative analysis of these 110 cases becomes all the more obvious when one remembers the even balance of operative routes.

Some of the patients were operated on by myself, others by other urologists, general surgeons, general practitioners and gynecologists. Hence they represent a wide assortment of surgical talent.

As far as the age factor is involved, it is interesting to note that those subjected to the suprapubic operation were, on an average, a trifle more than two years older than those subjected to the perineal. The average age of the suprapubic patients was 66.5 years, and that of the perineal patients, 64.3 years.

It is true that hitherto the perineal route has had a smaller operative mortality than the suprapubic; but during the past few years the mortality figures of the two operations have been rapidly approaching each other, particularly since the two-step suprapubic operation has been popularized. In view of this reduction of suprapubic mortality, largely due to better control of the renal factor, the element of extra hazard does not participate so markedly as formerly in the choice of operative procedure. Furthermore, since the probable end-results of an operative procedure are a weighty factor in the determination of its feasibility and choice, it is obvious that even though there is a slight extra operative hazard, either actual or apparent, this is, in a very large degree, neutralized by superior end-results. After all, the end-result of an operative measure is the acid test of its applicability.

At this point, I wish to state that any apparent discrepancy between the mathematical determination of any single factor and the total number of cases is due to the fact that in some instances certain questions were unanswered. Illustrative percentages of the several items involved are based on the actual number of available answers to each individual question. Again, when answers were vague or obviously incorrect, they were not used in the estimation of findings.



Comparative popularity of the two operations: solid line, suprapubic; broken line, perineal.

Entering on the matter of immediate operative convalescence, we may generously grant that any prostatectomy wound that closes entirely within four weeks may be designated as having healed promptly. As shown in Table 1, 61.2 per cent. of the suprapubic cases

TABLE 1.—CLOSURE OF WOUND

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
Healed promptly	30	61.2	21	42
Healed within 3 months...	16	93.8	12	66
Healed within 1 year.....	3	100.	9	84
Sinus persisting beyond one year, finally closing.....	0	0.	5	10
Permanent fistula	0	0.	3	6

in this series healed promptly as against 42 per cent. of the perineal cases. Of the suprapubic cases, 93.8 per cent. were healed within three months, while only 66 per cent. of the perineal cases closed up in the same period. Within one year following operation, the wounds in a full hundred per cent. of the suprapubic cases were entirely healed; of the perineal wounds, only 84 per cent. were healed by the end of the year. In other words, while every suprapubic wound had healed within a year, 16 per cent. of the perineal wounds were still discharging urine through a sinus. Carrying the analysis further, we find that in 6 per cent. of the cases of the entire perineal series, a permanent discharging sinus persisted. One of these cases presented a vesicorectal fistula, with the urine discharging into the rectum.

DIVERGENCE IN END-RESULTS

It is at this point that the end-results of the two modes of prostatectomy begin their wide divergence. Since these end-results are expressed in mathematical terms, they are the more readily grasped, and the element of personal bias is eliminated.

In the vast majority of cases of prostatic hypertrophy, the symptom forcing the patient to seek surgical aid is either intolerable frequency of urination, particularly at night, or retention. Of necessity, removal of the gland relieves the retention. Now let us examine the figures and see what degree of relief is secured from the inordinate frequency. While, of course, no sharply defined line between normal and abnormal frequency can be drawn, yet for the purpose of conveniently arriving at an approximate standard of normality, we may arbitrarily fix a three-hour period for the day and a four-hour period for the night.

From my questionnaire I received definite information on the day urination of thirty-seven suprapubic and of thirty-six perineal patients. The results are summarized in Table 2. Of the thirty-seven suprapubics, thirty urinate during the day at normal intervals, five every two hours, one every hour, and one every thirty minutes. In the thirty-six perineal cases, twenty-four of the patients were restored to normal diurnal frequency, ten can hold the urine only two

hours and two must urinate every hour. There are no perineal cases in the thirty-minute class.

Expressing these results in percentages, we find, among the suprapubic cases, that they are good in 81, fair in 13.5 and poor in 5.4 per cent., while among the perineal cases the day results are good in 66.6, fair in 27.7 and poor in 5.5 per cent.

As we usually determine nocturnal frequency by the number of times a patient is compelled to arise from bed, I have thought it simpler to classify the night frequency in this manner, rather than to express it in periods of hours.

I have information on the nocturnal frequency of thirty-five suprapubic and thirty-eight perineal patients. At this point the parallel figures are quite impressive. Of the patients in the suprapubic cases, thirteen do not arise at night at all, sixteen only once or twice, two three times, and four oftener than three times.

On the other hand, in the perineal cases, only one patient passes the night without urinating; sixteen arise once or twice; nine three times, and twelve must get up oftener than three times. Thus we may say that of the thirty-five suprapubic cases, twenty-nine have a normal nocturnal frequency, whereas only seventeen of the thirty-eight perineal cases are as fortunate. The patients in nine of the perineal cases

TABLE 2.—PRESENT FREQUENCY OF URINATION IN SEVENTY-THREE CASES

	Suprapubic	Perineal
Day:		
Normal	30	24
Two hours	5	10
One hour	1	2
Thirty minutes	1	0
Night:		
Do not arise at all	13	1
Arise once or twice	16	16
Arise three times	2	9
Arise oftener than three times	4	12

Results expressed in percentages:

	Suprapubic		Perineal	
	Day	Night	Day	Night
Good	81	82.8	66.6	44.7
Fair	13.5	5.7	27.7	23.7
Poor	5.4	11.5	5.5	31.5

arise three times and in twelve oftener than three times.

Since the correction of marked frequency, and especially nocturnal frequency, is an important purpose of prostatectomy, the gross figures and percentages covering this function form an index of no light value in prosecuting a comparative analysis of the two operations. My percentages demonstrate that, so far as day frequency is concerned, the suprapubic has a big lead over the perineal route, and a comparison of the night results shows that in suprapubic cases these results are almost twice as gratifying as in the perineal cases. While 82.8 per cent. of the suprapubic patients were restored to a very comfortable degree of night frequency, only 44.7 per cent. of the perineal patients were as fortunate, and whereas the night results in the suprapubic cases are poor in 11.4 per cent., among the perineal cases 31.5 per cent. may be so designated. In other words, the poor results of the perineal operation, as far as they relate to the important item of nocturnal frequency, are nearly three times as great as in the suprapubic series.

When we bear in mind the almost intolerable suffering that is consequent on an incontinent bladder, efforts to preserve the integrity of its function seem easily entitled to the most urgent consideration. The patient who returns home after a prostatectomy with a hopelessly incontinent bladder is not likely to hold his operation a success, even though it did effect the removal of his prostate gland.

Concerning this phase of our subject, I have definite information of forty-six suprapubic and fifty perineal cases, which is summarized in Table 3. Of the forty-six suprapubic patients, thirty-seven have full control of the bladder function, seven have partial control, and two have complete incontinence. Of the fifty perineal patients, thirty-two have full control, eleven have par-

TABLE 3.—CONTROL OF BLADDER

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
Full control	37	80.5	32	64
Partial control	7	15.2	11	22
Complete incontinence	2	4.3	7	14

tial control and seven have complete incontinence. Expressed in percentages, these results loom up still more strikingly. While the patients in 80.5 per cent. of the suprapubic cases have full control, only 64 per cent. of the patients in the perineal cases are equally lucky. Of the suprapubic cases, 15.2 per cent. are put into the partial control designation, while 22 per cent. of the perineal cases must be so described.

The suprapubic patients with complete incontinence embrace 4.3 per cent. of the entire suprapubic series, while 14 per cent. of the perineal cases are in this pitiable state.

In the examination of the various elements entering into the comfort of the prostatic postoperative life, only in the elements of persisting cystitis and pain do we find a balance in favor of the perineal route. By the figures set forth in Table 4, the questionnaire shows that 35 per cent. of the suprapubic patients complain of cystitis of varying grades, and 21 per cent. refer to definite pain at some point in the region of the site of operation. Of the perineal patients, 31 per cent. have cystitis and only 16 per cent. pain.

The answers relating to residual urine are too vague and inconclusive to be of substantial worth. Hence this factor will not be discussed.

As far as the force of the urinary stream is concerned, the figures so materially favor the suprapubic operation that I am sure the factor of urethral stricture must enter more deeply into the question of relative merit than we have hitherto thought. Of course, in working out the causes of reduced force of the stream, we must not forget the expulsive power of the bladder itself. I believe that in many instances the tonicity of the bladder is greatly improved on removal of the obstructing prostate; but if a stricture follows operation, this tonicity cannot be restored.

Of forty-two suprapubic cases investigated, twenty-two have a stream of good force, in eight the stream is

TABLE 4.—INCIDENCE OF CYSTITIS AND PAIN

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
Cystitis:				
Present	16	35	15	31
Absent	30	65	33	69
Pain:				
Present	10	21	8	16
Absent	38	79	41	84

fair, in twelve it is poor. In only twelve out of forty-six perineal cases is it good; in seventeen it is fair, and in seventeen poor. The percentage figures, as given in Table 5, show these results more graphically.

This suspicion of a preponderance of urethral damage following perineal prostatectomy becomes all the more clearly warranted when we examine the actual stricture reports. Among forty-six suprapubic cases there are three definite reports of stricture. Among forty-three perineal cases there are ten such

reports. Expressed in percentages, these results are: suprapubic 6.5 per cent., perineal 23.2 per cent.

As the possibility of stricture formation is a most important element in the remote success of a prostatectomy, it is well to give this point the consideration its importance warrants.

Regarding the clarifying effect prostatectomy has on the urine, the two operative modes enjoy somewhat similar percentages, which are presented in Table 6.

However close in agreement the figures on the turbidity of the urine may be, we find in the percentages

TABLE 5.—FORCE OF STREAM

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
Good	22	52.3	12	26
Fair	8	19	17	37
Poor	12	28.6	17	37

of stone formation a feature of considerable interest. Following suprapubic prostatectomy there was no stone formation in our series, while stone was formed in 4.1 per cent. of the perineal cases. Since lithiasis is favored through incomplete or difficult emptying of the bladder, with consequent urinary stagnation, we may look on stone formation as bearing a very close relationship to the factor of stricture formation.

While with the majority of these old men, active sexual life has ceased to be a matter of grave concern, yet there are many who, discussing with me the immediate and remote dangers of prostatectomy, inquire

TABLE 6.—CHARACTER OF URINE

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
Clear	30	65.2	31	67.4
Turbid	14	30.4	14	30.4
Variable	2	4.4	1	2.1

seriously into the possibility of damaged sexual function. Hence the figures covering this phase are not without instructive value.

On this postoperative phase I have information touching on thirty-three suprapubic and thirty-three perineal cases, a similarity that makes the figures given in Table 7 easier of comparative understanding. In twenty-one of the suprapubic cases there was no change effected in the sexual function, in nine it was diminished and in three increased. In the perineal series this function was unchanged in sixteen cases, diminished in sixteen, and increased in only one. Here it

TABLE 7.—EFFECT ON SEXUAL POWER

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
No change	21	63.6	16	48.5
Diminished	9	27.3	16	48.5
Increased	3	9.1	1	3

should be remembered that the patients in the suprapubic cases are, on an average, two years older than those in perineal cases.

Naturally the effect of prostatectomy on the general well-being of the patient is of the utmost importance, and the figures describing this item should be carefully digested. Among forty-three of the patients in forty-nine suprapubic cases, the effect on the general health was good, in three it was bad, and in three patients there was no change. In thirty-six of the forty-seven perineal cases the effect was good, and in four it was bad, with no change in seven. A glance at Table 8 shows that in this important feature of prostatectomy, the suprapubic operation has a big lead over the perineal.

CONCLUSION

It is well that the perineal operation is losing popularity, for in this careful analysis of results, only in three inconsequential features is an advantage to be found for this route in the parallel figures. In all the

TABLE 8.—EFFECT ON GENERAL HEALTH

	Suprapubic		Perineal	
	No.	Per Cent.	No.	Per Cent.
Good	43	87.7	36	76.6
Bad	3	6.1	4	8.5
No change	3	6.1	7	14.9

important features the suprapubic operation has a big lead, showing beyond the shadow of a doubt that, measured in end-results, suprapubic prostatectomy is vastly superior to the perineal operation.

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GLOBULES OF METALLIC MERCURY IN THE TISSUES

FINDINGS IN AN AORTIC ANEURYSM WITH EROSION OF THE VERTEBRAE *

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The case here reported is one of considerable interest in view of the finding at necropsy of numerous globules of metallic mercury in the tissues of an aneurysm of the aorta, and the eroded vertebrae of the spinal column. Myriads of minute globules of mercury were scattered throughout these tissues, the metal being easily expressed and collected into larger globules in the concavity of the aneurysm and eroded tissues.

The deposition of the metal in the actively eroding and necrotic tissues, and probably primarily in the necrotic vertebrae, constitutes a finding of unique interest and considerable importance, although by no means rare or unusual. As early as 1579, Fernel[1] states, in his work on the venereal disease, that metallic mercury may be found in the "putrid caries of bones" if the patient has been exposed to the vapor of mercury or of cinnabar, and also in those who have had repeated rubbings with the ointment. Since then, several observers have recorded the presence of metallic mercury in the necrotic bones of syphilitics receiving vigorous mercurial treatment; the literature of the last twenty-five years, however, contains but few records, owing probably to the practice of less vigorous dosage with mercury in the treatment of syphilis.

That mercury may be found by chemical methods in the brain, liver and other internal organs following its administration by inunction, subcutaneous and intramuscular injections of soluble and insoluble salts, or by swallowing, is well established; Fernel believed that the mercury as such was transported to these organs, but this result is now regarded, according to Hallopeau,[2] as due to successive combinations (as mercury albuminate) and decompositions, ending by the formation of a soluble salt and pure metal, or a reducible insoluble salt. The method of administra-

* From the Laboratories of the Philadelphia Polyclinic.

1. Fernel d'Amiens, J.: Le meilleur traitement du mal vénérien, 1579; traduction, preface et notes par L. Le Pilier, Paris, 1879.
2. Hallopeau, H.: Du mercure; action physiologique et thérapeutique, Paris, 1878.

tion of mercury in those instances in which the metal itself was found in the tissues is not always stated; but in most of them it would appear that the drug was given in the form of inunctions with mercurial ointment; unfortunately we were unable to learn from our patient the treatment he had received from various physicians. The suggestion has also been made that mercury may be transported in the body fluids in a colloidal state, its absorption and deposition in the tissues being placed on a physicochemical basis; the subject requires further study and elucidation.

It is also of interest to note that metallic mercury has been found chiefly in necrotic bones. In our case globules were found not only in the necrotic vertebrae, but also in the inflammatory soft tissues of the aneurysm. In a second aneurysm, however, without involvement of bone, we were unable to find metallic mercury.

While mercury has an apparent protoplasmic affinity for the *Spirochaeta pallida*, explaining the specificity of the drug in the treatment of syphilis, the deposition of mercury in the tissues bears no relation to the distribution of spirochetes; we were unable to find spirochetes in the eroding mercury-laden aneurysm, and numerous chemical studies have shown the presence of mercury in the liver and other internal organs of otherwise normal experimental animals, as recently described by Schamberg, Kolmer, Raiziss and Gavron,[3] and also in healthy rabbits following inunctions of mercurial and calomel ointments. So far as the deposition of metallic mercury is concerned, it would appear that this occurs by reason of chemical changes in necrotic tissues of syphilitic or nonsyphilitic etiology; Blundell has recorded the finding of scores of globules of mercury in the tissues of a fly blister in the epigastric region in a person who took half an ounce of metallic mercury for cathartic purposes.

REPORT OF CASE

The main features in the clinical history and necropsy of our case were as follows:

A negro man, aged 40, admitted to the medical wards of the Polyclinic Hospital, September 24, 1916, in the service of Dr. R. Max Goepp, complained of dyspnea, blood stained sputum, dry cough, a sense of pressure in the throat that rendered respiration difficult, and pains throughout the thorax. The patient died two days after admission with symptoms of suffocation; a clinical diagnosis of aneurysm of the arch of the aorta had been made.

The patient had had the usual diseases of childhood, but no other illnesses until fifteen years before admission, when syphilis was contracted, a chancre on the penis being followed three weeks later by a general rash. He had been addicted to the use of alcohol and tobacco for many years.

According to the patient's statements the present symptoms began about three and a half months before admission to the hospital. A sensation of choking and a dry, harassing cough induced him to consult several physicians, two of whom diagnosed "bronchitis" and "asthma," respectively. The dyspnea gradually became worse, and severe shooting pains developed in the left side of the thorax, particularly over the precordial area, radiating to the left shoulder, to the base of the neck and along the spine on the left side. A slight hemorrhage from the mouth occurred two days before admission to the hospital. Physical signs of aortic aneurysm were elicited; the urine contained albumin and casts; the Wassermann reaction was strongly positive.

3. Schamberg, J. F.; Kolmer, J. A.; Raiziss, G. W., and Gavron, J. L.: Experimental Studies of the Mode of Absorption of Mercury when Applied by Inunction, THE JOURNAL A. M. A., Jan. 19, 1918, p. 142.

At necropsy a severe aortitis and two aneurysms were found. The first aneurysm was fusiform in shape and involved the first portion of the descending aorta. This aneurysm was pressing on the trachea and esophagus, but had not produced ulceration of these structures. The mucous membrane of the trachea and bronchi of both lungs was considerably thickened, congested and covered with a thick tenacious mucus. No actual erosion of a blood vessel was found, and the one slight hemorrhage occurring during life may have been due to the rupture of a small vessel in the inflamed mucosa of the trachea during an attack of coughing. The smaller bronchi contained considerable mucopurulent material, and the right lung several patches of an early bronchopneumonia.

The second aneurysm occurred at a point just above the passage of the aorta through the diaphragm, and had produced considerable erosion of the bodies of the second, third, fourth and fifth dorsal vertebrae on the left side and the contiguous ribs. Several small clots of blood were found in various cavities within this larger cavity. During the manipulation of the tissues consequent to the removal of the specimen, several large globules of metallic mercury were found to have collected. Minute inspection of the tissues showed the presence of myriads of pure globules of mercury scattered throughout the remainder of the wall of the aneurysm and the eroded tissues of the vertebrae.

Mercury was not found microscopically in the first mentioned aneurysm or in any other organ or tissue.

Sections of the heart, aorta, both aneurysms, lungs, trachea, spleen, liver, kidneys, suprarenal glands, and other tissues stained by the method of Levaditi and also with Warthin's modification, did not show the presence of *Spirochaeta pallida*. Sections of the tissues of the mercury-bearing aneurysm showed numerous cavities and spaces previously occupied by the mercury, some with and many without surrounding lymphocytic infiltration; with tissues embedded in paraffin and celloidin the globules invariably escaped during the process of cutting, although occasionally very small masses remained.

Unfortunately the patient could not remember the names or addresses of several of the physicians whom he consulted and whose medicines he took; for this reason we were unable to ascertain how much mercury was taken and the route of administration. There can be but little doubt, however, that mercury was administered; and the deposition of the metal in the active eroding lesions, and probably primarily in the vertebrae, constitutes a finding of unique interest and considerable importance.

Thirst at Sea.—M. Roberts suggests that persons suffering from thirst at sea might find relief by injecting sea water into the rectum. He writes to the *British Medical Journal*, Feb. 16, 1918, p. 220, to describe an experience by Mr. R. Graham, who undertook a fast during a sea voyage and while fasting injected daily 2 gallons of pure sea water. "During the first five days he did not take anything to drink although the fourth and fifth days he rinsed out his mouth with ordinary water. He did not feel in the least thirsty until the sixth day, when he took half a glass of water. Thirst was very slight. On the seventh day he drank one and one-half glasses of water although he felt he could have gone without had he chosen to do so. During this period his pulse was normal, his general condition good, his strength well maintained and though the injections resulted in the usual evacuation there was no tendency to diarrhea or other disturbance. On the eighth day he resumed his normal life." Roberts suggests that with a rectal syringe as part of the boat's normal equipment the lives of seamen and others dying of thirst, even this last year, might have been saved. Injections of sea water are used as a routine measure in Lieutenant-Colonel Wherry's service, he writes. He adds that in an emergency a rubber tube might be used as a siphon or the nozzle and bowl of a tobacco pipe. He commends the suggestion for the slow injection of sea water as an enema for absorption, although he knows of no navigator who has tried it.

CONTROL OF POLYURIA IN A CASE OF DIABETES INSIPIDUS

BY MEANS OF HYPOPHYSIAL EXTRACT

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It is gradually becoming known that certain cases of diabetes insipidus are due to an underfunction of the pars intermedia of the hypophysis, and that in these cases the polyuria may be controlled by the injection of hypophysial extract. The case I am about to report, which is a typical case of hypopituitarism with diabetes insipidus, shows well the effect of this therapy.

Barker and Mosenthal[1] have described a case of diabetes insipidus treated by pituitary solution, and they present the literature in relation to the subject. Barker and Hodge[2] also described a case in a multiglandular endocrinopathy so treated.

David S., a boy, aged 12½ years, had urinated excessively since he was 3½ years of age. In the last year of that period, his mother had noticed that his eyesight was getting bad. His mother, father and sister were well.

The physical examination was negative with the exception of the presence of a bilateral temporal hemianopsia. The Wassermann and leutin tests were negative. A roentgenogram of the brain showed a normal sella turcica. The diagnosis of diabetes insipidus with a possible suprasellar cyst of the pituitary was made. On account of the lack of pathologic conditions in the sella turcica and the absence of erosion of the clinoid processes, it was decided that the growth was out of the sella turcica. Because of the fact that the condition had been present for nine years, it was considered cystic rather than malignant, and the presence of the hemianopsia revealed the fact that there was pressure on the optic tracts.

The accompanying table shows the fluid intake and output and the influence of the treatment on these two factors. The table shows very clearly the control of the polyuria by means of the pituitary solution. It

INTAKE AND OUTPUT OF FLUIDS

Day	Intake Fluids C.c.	Urine C.c.	Sp. Gr. Urine	Treatment
1	5,000	6,860	1.002	
2	5,600	6,000	1.003	
3	5,800	6,400	1.002	
4	6,960	7,000	1.002	
5	6,900	7,200	1.002	
6	6,200	7,100	1.003	
7	8,640	8,200	1.003	Thyroid tablets 2 grains t. i. d.
8	8,680	8,300	1.003	Thyroid tablets 2 grains t. i. d.
9	9,012	8,500	1.004	Thyroid tablets 2 grains t. i. d.
10	9,000	8,510	1.003	Thyroid tablets 2 grains t. i. d.
11	8,680	8,400	1.003	
12	8,600	8,500	1.002	
13	8,160	8,300	1.002	
14	8,400	8,600	1.002	
15	3,500	3,600	1.008	1 c.c. pituitary (solution) injected
16	3,200	3,000	1.009	1 c.c. pituitary (solution) injected
17	3,300	3,000	1.009	1 c.c. pituitary (solution) injected
18	6,200	7,000	1.002	
19	8,600	8,300	1.002	
20	9,000	8,600	1.002	Pituitary tablet, 5 grains by mouth
21	8,800	8,610	1.002	Pituitary tablet, 5 grains, by mouth
22	8,500	8,800	1.002	
23	9,000	8,700	1.002	
24	3,600	3,400	1.007	1 c.c. pituitary (solution) injected
25	3,200	3,000	1.008	1 c.c. pituitary (solution) injected
26	3,400	3,100	1.009	1 c.c. pituitary (solution) injected
27	6,200	6,900	1.002	
28	8,600	9,020	1.002	

also shows that the thyroid extract does not have any effect on the polyuria. The ingestion of pituitary gland does not affect the polyuria. The effect of the injection of the pituitary solution lasts only about twenty-four hours. It may be noticed that after the injection the urine shows some pigment, not having the water-clear color of the usual urine. As the effect of the pituitary solution wears off, it may be noticed that the urine again becomes pale.

Jenkin's Arcade.

1. Barker and Mosenthal: Jour. Urol., 1917, **1**, 449.
2. Barker and Hodge: Endocrinology, 1917, **1**, 427.

THE TOTAL BLOOD VOLUME IN PERNICIOUS ANEMIA

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In a preliminary report,[1] I described a new method for the estimation of the total volume of blood in anemia.

In no disease is it of greater importance to know the volume of blood in the body than in pernicious anemia. We find patients in this disease bearing their illness variably, though the degree of anemia in all may be the same. In many the same group of symptoms are present, varying only in intensity. I believe that individual peculiarities may account for differences in the intensity of symptoms, and that also some differences may possibly be accounted for by varying degrees of toxicity; nevertheless, the main factor, in my opinion, is the hitherto unrecognized importance of blood volume.

Rancke has demonstrated that the blood is thus distributed in the various organs: In the rabbit, one-fourth to the heart, lungs and great vessels; one-fourth to the resting muscles, and one-fourth to the remaining organs. In man, to the spleen, 0.23 per cent.; to the brain and cord, 1.24 ; to the kidneys, 1.63; to the skin, 2.10; to the intestine, 6.30; to the bones, 8.24; to the heart, lungs and great vessels, 22.76; to the resting muscles, 29.20, and to the liver, 29.30 per cent. According to Rancke, therefore, a man (Case 3) with a 30 per cent. hemoglobin and a blood volume of 1,600 c.c. has an amount of blood nourishing his brain that is the equivalent of 6.5 c.c. of normal blood. If we assume that this man normally would carry 5 liters (quarts) of blood in his body, then the brain would be nourished by 62.5 c.c. of blood containing 100 per cent. of hemoglobin.

It is very singular and startling, in view of all we have previously been taught about the amount of blood that may be lost before life becomes extinct. The literature tells us that a loss of half the blood will in most cases produce death. Yet, in the case cited below, the blood in the brain of this individual is reduced to one-tenth that of a normal person without an approach to even partial unconsciousness. As a matter of fact, this man's brain (Case 3), if anything, was in a hyperexcitable condition whereby he was enabled to perform business tasks of large proportions with unusual keenness, in marked contrast to his physical condition, which was very desperate.

In this case, the intestine, according to Rancke's figures, was nourished by an amount of blood equal to 34 c.c. with 100 per cent. of hemoglobin, whereas if this man were normal, the intestine would be perfused by a volume of 315 c.c. of blood containing 100 per cent. of hemoglobin. Is it at all singular that such a patient should suffer severe gastro-intestinal disturbances with loss of appetite and nausea? Indeed,

1. Lindeman, Edward: A New Method for Estimating Total Blood Volume in Anemia, THE JOURNAL A. M. A., April 27, 1918, p. 1209.

it is remarkable that his symptoms were not worse; and the prompt restoration of appetite and relief from gastro-intestinal disturbances are the most striking things that occur after the blood transfusion in such cases.

I have observed that in the cases of anemia of the same or even of greater degree in which there is a larger blood volume, the gastro-intestinal disturbances are less severe. It is evident, therefore, and imperative that every effort should be employed to produce a high blood volume and to maintain it. A patient can tolerate his disease with greater comfort and with a feeling of well-being. Despite the anemia, he becomes less discouraged and is more inclined to take food. The increased quantity of food, especially liquids, will increase his blood volume, and a favorable cycle may be established. An increased consumption of food favors blood regeneration and may be regarded as a favorable sign in this disease. Naturally any depressing influences, such as sepsis, bad teeth, worry, intestinal disorders, etc., must be eliminated so that the regenerative power of the patient may not be suppressed.

I think we are apt to exaggerate the relationship of the teeth in this disease. I have seen cases in which a distinct slump followed the removal of bad teeth, out of proportion to other crises; and the course in these cases was no more favorable after the removal of the teeth than before. That, however, is another phase that does not interest us particularly here, excepting as a comment in restraining an overzealous enthusiast.

The ringing in the ears and the palpitation of the heart, which are frequently very distressing to a patient, are due not alone to the quality but more largely to the diminution of the quantity of the blood. Thus a patient with a larger blood volume will bear a greater degree of anemia without experiencing palpitation of the heart (often spoken of as fluttering) or roaring in the ears. Another quite frequent symptom of this disease is weakness, with exhaustion and syncope.

It is surprising how well some patients can go about and even sometimes perform laborious tasks in the face of a severe grade of anemia. I intend to show that this is possible only when there is a relatively large blood volume. When the blood volume is small, a less degree of anemia will produce a greater degree of exhaustion, weakness and faintness.

While it is evident that a shrunken blood mass intensifies the symptoms enumerated, it is not sufficient simply to restore the bulk of the blood. The bulk of blood is only one of the factors to be corrected. It is of the greatest importance to increase and maintain the richness of the blood not only in terms of red cells and hemoglobin but also in ferments, salts, proteins, alkali capacity, etc.

In spite of the relative hydremia to cell volume in pernicious anemia, if the blood volume is reduced 50 or 60 per cent., even though the salts, ferments and proteins may be of normal percentage, there is a great impoverishment in these elements proportional to the diminution in blood volume. Blood analyses in these cases, therefore, are necessarily incomplete without a knowledge of the blood volume. I am certain that many pathologic factors will be revealed by chemical analyses in the light of blood volume which have not heretofore been detected.

The method for calculating blood volume I have already described.[1] It is based on percentage relationships of cell volumes before and after transfusions according to the formula:

$$x = \frac{lb - bc}{a - l}$$

x = initial blood volume
a = percentage by volume of red blood cells
b = volume introduced by transfusion of blood
c = percentage by volume of the volume of red blood cells introduced by blood transfusion
l = final percentage by volume of red blood cells

REPORT OF CASES

CASE 1.—A man, aged 45, weighing 150 pounds, and 5 feet 10 inches in height, had been ill with the disease five months. His teeth were bad. No transfusion had been performed. He was dyspneic from air hunger. He was very drowsy, and partially comatose. He was pallid, and had lost strength. His appetite was poor, and he suffered from nausea. He moaned frequently because of his distress. He was too weak to walk.

TABLE 1.—BLOOD AND RESPIRATION IN CASE 1

	Before Transfusion	After Transfusion
Red blood cells	800,000	2,216,000
Hemoglobin, per cent.	15	40
Respiration	24-28	20-24
Pulse	96	66-72
Blood Pressure—		
Systolic	115	140
Diastolic	60	70
Cell volume, per cent.	12.16	24.8

The cell volume of the donor was 46.64 per cent.; 1,222 c.c. of blood were transfused; 67 c.c. of blood were withdrawn for analysis before transfusion.

Blood volume = 2,103 c.c. + 67 c.c. = 2,170 c.c. = 3 per cent., or one thirty-third of the body weight.

The patient felt and showed a very striking improvement as soon as he had received 160 c.c. of blood. At this stage of the transfusion, the improvement cannot be accounted for by the increment of red blood cells and hemoglobin, but is to be attributed rather to the improved blood volume. There was continued improvement throughout the transfusion. Pallor, drowsiness and weakness rapidly disappeared, and the patient's appetite improved the following day. He walked about in a few days.

There were no chills. After the transfusion there was a rise of temperature of 2 degrees.

CASE 2.—A man, aged 59, weighing 150 pounds, and 5 feet 7 inches in height, had been ill with the disease fourteen months. Transfusions had been performed, July 5, Sept. 19 and Dec. 5, 1917, with 1,800, 1,600 and 1,500 c.c., respectively. There were no chills, and there was a postoperative rise in temperature of 2, 3 and 2 degrees.

Jan. 29, 1918, there was a red blood count of 2,600,000, and the hemoglobin was 50 per cent. The patient's condition was good.

February 1, two abscessed teeth were extracted.

February 14, the condition of the patient before transfusion was very grave. There were great weakness, prostration, loss of appetite, sore mouth, nausea and vomiting, very slow mentality, forgetfulness, slurring speech, palpitation of the heart, a temperature of from 101 to 102, dyspnea on exertion only, and a roaring and thumping noise in the ears. There was no edema. A transfusion of 1,500 c.c. was performed. There was no chill. There was a rise in temperature of 2 degrees.

Seventy c.c. of blood were removed before transfusion.

TABLE 2.—BLOOD AND RESPIRATION IN CASE 2

	Before Transfusion	After Transfusion
Red blood cells	1,200,000	3,200,000
Hemoglobin, per cent.	30	68
Respiration	26-30	20-22
Pulse	104	72
Cell volume, per cent.	10	26.77

The cell volume of the donor was 51.3 per cent.

Blood volume = 2,131 c.c. + 70 c.c. = 2,201 c.c. = 3 per cent., or one thirty-third of the body weight.

When the patient had received 100 c.c. of blood he began to experience marked improvement.

Immediately after the transfusion, all the symptoms disappeared, and a few days later the patient walked about and went to business. His mental condition cleared up spontaneously.

CASE 3.—A man, aged 63, weighing 135 pounds, and 5 feet 6 inches in height, had been ill with the disease two and a half years. There had been complete absence of hydrochloric acid in the stomach for twenty years before the present illness, but no evidence of this disease had been present up to two and a half years before.

The first transfusion, of 1,500 c.c., was performed, March 15, 1915. There were no chills and no rise of temperature.

Splenectomy was performed, March 24, 1916.

The second transfusion, of 1,400 c.c., was performed, July 14, 1916. There was no chill. There was a rise in temperature of 3 degrees.

The third transfusion, of 1,400 c.c., was performed, May 10, 1917. There was no chill. There was a rise in temperature of 2 degrees.

Four weeks prior to the third transfusion, the patient had several carious teeth extracted. This was followed by a bad slump in his blood and general condition.

The fourth transfusion, of 1,700 c.c., was performed, Sept. 11, 1917. There was no chill. There was a rise in temperature of 4 degrees.

Just before the fifth transfusion the patient was in a desperate condition and was apparently in the terminal stage of his disease. There were extreme weakness and prostration, nausea and vomiting, complete aversion to food, and eructations of quantities of gas. He was unable to walk or sit up on account of weakness. There was no paralysis. He was short of breath without exertion, he moaned constantly because of distress, and he was the picture of a complete physical wreck. In striking contrast to his physical was his mental condition, which was unusually active; he was keen to a degree almost uncanny. He performed many complicated mental tasks with remarkable celerity. He retained a vivid and acute memory of the remote past even better than the other members of his family. In brief, it seemed as though the inhibitory mechanism governing his mental activities was released and that his cerebration was accelerated by irritation due to an impoverished blood stream.

Jan. 10, 1918, 1,400 c.c. of blood were transfused. There was no chill nor rise of temperature. Ninety c.c. of blood were withdrawn before transfusion.

TABLE 3.—BLOOD AND RESPIRATION IN CASE 3

	Before Transfusion	After Transfusion
Red blood cells	1,800,000	3,500,000
Hemoglobin, per cent.	36	70
Respiration	32	22
Pulse	108	76
Blood Pressure—		
Systolic	110	130
Diastolic	80	85
Cell volume, per cent.	18.2	31.3

The cell volume of the donor was 45.5 per cent.

Blood volume = 1,518 c.c. + 90 c.c. = 1,608 c.c. = 2.4 per cent., or one fortieth of the body weight.

The relatively high cell volume may be compared with that in Case 5, the difference in blood volume, and also the physical state.

There was a prompt disappearance of all symptoms after the transfusion, and an increasingly rapid return of strength and appetite. The patient was less excitable, and he became quite calm and normal. He walks about his home, drives about town, and attends the theater twice weekly.

CASE 4.—A man, aged 60, weighing 160 pounds, and 5 feet 2 inches in height, had been ill with the disease two years. He had been treated for a period of about fifteen months with the usual medication, to which he responded very well in the first two crises. The blood pressure varied considerably, and in the height of his anemia it rose to 240 systolic, and 140 diastolic. When the blood condition improved, the blood pressure dropped and at one time reached a systolic of 140 and a diastolic of 80. During the past six months, however, while he has been under my observation at frequent intervals, his blood pressure average has been between 180 and 190 systolic, and between 80 and 90 diastolic.

In July, 1917, he developed angina pectoris, from which he suffered considerably. At first the attacks were controlled satisfactorily by nitrites, but later these failed to afford relief. In July and August, when nitrites had failed, he was given small transfusions at intervals of from one to two weeks, and the angina was promptly relieved after each transfusion. Later these small transfusions failed to influence the angina. I was called in consultation by Dr. Stockton of Buffalo and Dr. Leonard of North Tonawanda in September, 1917. I then advised large transfusions. I performed transfusion, Sept. 14, 1917; 1,200 c.c. of blood were given. There was a prompt disappearance of angina for a period of about seven weeks. There were no chills. The temperature rose 3 degrees.

Transfusion was repeated whenever the angina recurred, with prompt relief, and the patient remained free of any attacks during the interim indicated by the following dates:

October 27, a transfusion of 1,440 c.c. was performed. There was no chill. There was a rise in temperature of 1 degree.

November 25, a transfusion of 1,000 c.c. was performed. There was no chill. There was a rise in temperature of 1 degree.

December 20, a transfusion of 500 c.c. was performed. There was no chill. There was a rise in temperature of 1 degree.

December 29, a transfusion of 1,489 c.c. was performed. There was no chill. There was a rise in temperature of 1 degree.

Jan. 23, 1918, the patient's condition was one of loss of appetite, weakness, and return of angina. He walked, but with considerable effort.

January 24, a transfusion of 1,600 c.c. was performed. There was no chill. There was a rise in temperature of 1 degree; 80 c.c. were withdrawn for analysis.

TABLE 4.—BLOOD AND RESPIRATION IN CASE 4, JANUARY 24

	Before Transfusion	After Transfusion
Red blood cells	2,080,000	3,950,000
Hemoglobin, per cent.	48	72
Respiration	24	20
Pulse	72	60
Blood Pressure—		
Systolic	190	185
Diastolic	90	85
Cell volume, per cent.	21	30

The cell volume of the donor was 41 per cent.

Blood volume = 2,079 c.c. + 80 c.c. = 2,159 c.c. = 2.8 per cent., or one thirty-fifth of the body weight.

February 24, the condition of the patient was excellent in every respect excepting for the recurrence of his angina in the past thirty-six hours. The appetite and strength were very good. The patient had gained 15 pounds in weight since January 24, and there had been no edema.

February 20, a transfusion of 1,650 c.c. was performed. There was no chill. There was a rise in temperature of 0.5 degree; 76 c.c. of blood were removed before transfusion.

TABLE 5.—BLOOD AND RESPIRATION IN CASE 4, FEBRUARY 20

	Before Transfusion	After Transfusion
Red blood cells	2,240,000	4,900,000
Hemoglobin, per cent.	55	78
Respiration	24	20
Pulse	68	60
Blood Pressure—		
Systolic	195	200
Diastolic	95	100
Cell volume, per cent.	25.24	30.05

The blood volume of the donor was 40.2 per cent.

Blood volume = 2,889 c.c. + 76 c.c. = 2,965 c.c. = 3.53 per cent., or one twenty-eighth of the body weight.

The blood analysis indicates a case of hypertension. The electrocardiogram demonstrates considerable involvement of the myocardium. This is the first case to my knowledge of pernicious anemia with a complication of angina pectoris.

Up to this time the angina has not recurred.

Blood volume after the last transfusion = 4,549 c.c. = 5.42 per cent., or one eighteenth of the body weight.

CASE 5.—A man, aged 43, weighing 130 pounds, and 5 feet 7 inches in height, had been ill with the disease two and one-half years. The teeth were excellent. Roentgenoscopy of the teeth, etc., was negative.

The first transfusion, in June, 1916, of 1,400 c.c., had not been followed by a chill. There was a rise in temperature of 4 degrees.

The second transfusion, Sept. 4, 1917, of 1,460 c.c., had not been followed by a chill. There was a rise in temperature of 2 degrees.

The symptoms noted immediately before the third transfusion were slight palpitation, a moderate thumping and roaring noise in the ears, some weakness, no prostration, loss of appetite, slight nausea, and no vomiting. The patient's mental condition was excellent. The general condition was fairly good. He was able to attend his occupation to within a few days of his last transfusion. Sensory disturbances of the limbs existing at the time of the first transfusion and for a period of about eight months afterward have entirely disappeared.

Dec. 19, 1917, transfusion of 1,603 c.c. was performed. The amount removed before transfusion was 90 c.c.

TABLE 6.—BLOOD AND RESPIRATION IN CASE 5

	Before Transfusion	After Transfusion
Red blood cells	1,360,000	2,800,000
Hemoglobin, per cent.	30	65
Respiration	24	20
Pulse	84	72
Blood Pressure—		
Systolic	120	140
Diastolic	65	75
Cell volume, per cent.	13.675	24.675

The cell volume of the donor was 48.9 per cent.

Blood volume = 3,520 c.c. + 90 c.c. = 3,610 c.c. = 5.78 per cent., or one nineteenth of the body weight.

After the transfusion, the patient was able to perform his duties with disappearance of all symptoms.

The difference in the condition of this patient should be compared with that of others of lower blood volume.

CASE 6.—A woman, aged 60, weighing 139 pounds, and 5 feet 4 inches in height, had been ill with the disease one and one-fourth years.

In April, 1916, she was operated on for cholecystitis. The gallbladder was drained, and the appendix removed. No stones were found. A large amount of bile was present. The appendix was normal.

The teeth were false excepting the lower five teeth in front, which were in good condition.

Symptoms before transfusion were weakness, nausea, vomiting and persistent cough. The patient was generally uncomfortable. She was able to walk, but with difficulty.

Feb. 7, 1918, the first transfusion, of 1,270 c.c., was performed; 66 c.c. of blood were withdrawn before transfusion.

TABLE 7.—BLOOD AND RESPIRATION IN CASE 6

	Before Transfusion	After Transfusion
Red blood cells	1,288,000	3,192,000
Hemoglobin, per cent.	30	60
Respiration	28-40	20
Pulse	96-108	80-88
Cell volume, per cent.	7	19

The cell volume of the donor was 49 per cent.

Blood volume = 2,623 + 66 c.c. = 2,689 c.c.

The patient improved promptly, and gained in strength and appetite. The cough ceased, and a few days later she went about the wards. She left the hospital two weeks after transfusion. Her condition was good.

CASE 7.—A man, aged 58, weighing 150 pounds, and 5 feet 8 inches in height, had been ill with the disease one year. The teeth were in poor condition. This is the type of case I regard as unfavorable. The reasons for this will be discussed in some of my subsequent papers. We have not succeeded as yet in persuading the patient to have the mouth roentgenographed and treated.

The first transfusion, of 2,300 c.c., was performed, Sept. 5, 1917. There was no chill. There was a rise in temperature of 3 degrees. The second transfusion, of 1,500 c.c., was performed, Nov. 14, 1917. There was no chill. There was a rise in temperature of 2 degrees.

The third transfusion, of 1,200 c.c., was performed, Jan. 17, 1918. There was no chill. There was a rise in temperature of 3 degrees. Before the third transfusion, 70 c.c. of blood were withdrawn. Before this transfusion, the patient was very pale, there was palpitation of the heart, and there were roaring and a thumping noise in the ears. He was able to walk about the house, and up and down stairs, though he was weak. His appetite was fair.

TABLE 8.—BLOOD AND RESPIRATION IN CASE 7

	Before Transfusion	After Transfusion
Red blood cells	1,100,000	2,800,000
Hemoglobin, per cent.	25	60
Respiration	22	20
Pulse	76	72
Cell volume, per cent.	12.58	23.29

The cell volume of the donor was 48.88 per cent.

Blood volume = 2,868 c.c. + 70 c.c. = 2,938 c.c. = 4.08 per cent., or two forty-ninths of the body weight.

The usual improvement following transfusion was delayed in this case until the fourth day. The appetite was increased, and there was a return of strength with disappearance of the symptoms.

The symptoms should be compared with those in the same degree of anemia in Cases 1, 2 and 3.

The patient has remained in good condition since his last transfusion.

March 22, I was informed that there had been general moderate edema in the past few days, with hemoglobin, 38 per cent.

CASE 8.—A man, aged 66, weighing 180 pounds, and 6 feet in height, had been ill with the disease two and one-half years. Before consulting me in May, 1916, he had received a series of small transfusions at home of 500 c.c. each, over a period of about four months, with only slight temporary benefit.

I performed the first transfusion, of 1,600 c.c., May 2, 1916. There was no chill nor fever.

May 4, 1916, splenectomy was performed. He remained well one year, when he again returned for transfusion.

May 13, 1917, the patient received 2,300 c.c. There was no chill. There was a rise in temperature of 2 degrees. He went home, a distance of 150 miles, two days later.

Convinced of the benefit of large transfusions, he came to New York, Dec. 6, 1917, for a transfusion. He received 1,500 c.c., with no chill and no rise of temperature, and returned to his home twenty-four hours later. The symptoms before transfusion were loss of appetite, moderate weakness, a slight ringing and a thumping noise in the ears, and "fluttering of the heart."

TABLE 9.—THE BLOOD IN CASE 8

	Before Transfusion	After Transfusion
Red blood cells	1,250,000	2,800,000
Hemoglobin, per cent.	30	60
Blood Pressure—		
Systolic	130	145
Diastolic	90	95
Cell volume, per cent.	13.5	24.1

The cell volume of the donor was 48.6 per cent.

Blood volume = 3,207 c.c. + 8 c.c. = 3,215 c.c. = 4.94 per cent., or one twentieth of the body weight.

The transfusion was followed by a rapid disappearance of all the symptoms and a return of the appetite.

It should be noted that this man, with an anemia of 1,250,000, and 30 per cent. hemoglobin, was capable of traveling 150 miles to New York without any distress. This would not have been possible if the volume of the blood had not been adequate as in Cases 1, 2 and 3, even though the degree of anemia was the same.

CASE 9.—A woman, aged 67, weighing 160 pounds, and 5 feet 9 inches in height, had been ill with the disease one

and one-fourth years. An interesting fact to note in conjunction with this case is that the daughter during the past twenty years has also had no free hydrochloric acid in her stomach; she is now 43 years old, and as yet shows no evidence of the disease.

The first transfusion, of 1,400 c.c., was performed, July 2, 1917. There was no chill nor fever.

The second transfusion, of 1,600 c.c., was performed, Nov. 17, 1917. There was no chill. There was a rise in temperature of 4 degrees.

The third transfusion, of 1,520 c.c., was performed, Feb. 11, 1918. There was no chill. There was a rise in temperature of 2 degrees.

Before the third transfusion this patient was in fairly good general condition excepting for loss of appetite and weakness. Her weakness was due chiefly to lesions of the spinal cord (partial paralysis), which was involved at the onset of her disease. Her first symptoms were those referred to these lesions, and they have persisted and gradually increased since. There was no dyspnea, prostration, palpitation, or noises in the ears.

TABLE 10.—BLOOD AND RESPIRATION IN CASE 9

	Before Transfusion	After Transfusion
Red blood cells	1,440,000	2,900,000
Hemoglobin, per cent.	30	50
Respiration	20	20
Pulse	72	72
Blood Pressure—		
Systolic	130	140
Diastolic	90	95
Cell volume, per cent.	15.19	27.11

The cell volume of the donor was 45.76 per cent.; the amount transfused, 1,520 c.c.; 75 c.c. of blood were removed before transfusion.

Blood volume = 4,130 c.c. + 75 c.c. = 4,205 c.c. = 5.4 per cent., or one eighteenth of the body weight.

After the transfusion, the patient's appetite returned, and her general condition, except that associated with the cord involvement, improved.

The absence of many symptoms in this case, except those referred to the cord compared with other cases of the same degree of anemia but lesser blood volume, should be noted.

CASE 10.—A man, aged 60, weighing 165 pounds, and 5 feet 9 inches in height, had been ill with the disease six years. The teeth were in good condition. Roentgenoscopy of the teeth was negative. The patient had been through several remissions of the disease, and responded well to arsenic at each crisis. Finally, in the last crisis, he failed to respond to any form of medication or treatment. It was then decided to employ transfusion.

The chief symptom before transfusion was drowsiness. There was moderate weakness; no palpitation of the heart, and no ear noises. The amount transfused was 1,510 c.c.; 65 c.c. were withdrawn before transfusion.

TABLE 11.—BLOOD AND RESPIRATION IN CASE 10

	Before Transfusion	After Transfusion
Red blood cells	1,330,000	2,900,000
Hemoglobin, per cent.	26	45
Respiration	20	20
Pulse	68	68
Cell volume, per cent.	14.75	22.2
Blood Pressure—		
Systolic	136	145
Diastolic	90	95

The cell volume of the donor was 42.6 per cent.

Blood volume = 4,134 c.c. + 65 c.c. = 4,199 c.c. = 5.29 per cent., or one eighteenth of the body weight.

After the transfusion, there was return of appetite and strength.

The absence of many symptoms in this case that are present in other cases of anemia of the same degree but of lesser blood volume may be noted.

COMMENT

In the preliminary report I mentioned the fact that the blood counts give results that are inaccurate and therefore valueless in the estimation of blood volume.

I do not mean to convey the idea that it is only necessary to correct the blood volume in order to effect a cure. My studies indicate that the blood volume in pernicious anemia is always reduced—that when the reduction in volume is only slight, the symptoms other than those referred to the nervous system, even though the degree of anemia may be severe, are relatively fewer and milder, and are borne with less distress. As the volume of blood is reduced, the symptoms of the disease increase proportionally. It is imperative, therefore, that to give proper treatment, an effort should be made to increase the bulk. The two ways in which this is best accomplished are by (1) an abundant fluid diet, preferably 2 quarts of milk a day, and (2) blood transfusion.

Diarrhea must be avoided because it reduces blood volume. Should it occur it should be regarded seriously and relieved promptly.

Patients should be given an abundance of milk in addition to the other forms of dietary regimen that may be employed. Even though the patient has aversion to all forms of food, milk should be forced. I am sure it will be found that many patients will bear their disease better and will be better able to await the favorable moment for improvement. In a great many cases, however, the blood regenerative power is extremely low and incapable of stimulation by the usual methods. These patients grow worse even with a relatively high blood volume. A large volume and a rich blood mixture are imperative in order to improve the desire and ability to take food and to restore the patients to a nearly normal condition. The only thing capable of doing this promptly and effectively is transfusion of unmodified blood in large amounts. It is a life saving measure. No other therapeutic procedure has so much value in robbing the disease of its terrors.

I have a large series of patients in whom transfusion has been performed with small amounts; but the large quantities yield very much better results.

It is seen that in this series of patients with pernicious anemia the blood volume varies from 1,600 to 4,200 c.c., or from 2.4 to 5 per cent. of the body weight. Those with the lowest figures are not ambulatory patients, and they suffer greatly with the disease. The patients with the higher figures, except in Case 9, could go about their homes and attend to their personal wants, and are in relatively better condition.

The normal blood volume in man, according to Keith, Rowntree and Geraghty, is 9 per cent. According to Haldane and Smith it is about 5 per cent. From my studies on donors when large quantities of blood have been drawn for transfusion, I am inclined to believe that the former workers are more nearly correct.

One should guard against extravagant claims as to curing the disease, because of its tendency to recur even after many years. Recently I was consulted in a case that had recurred after seventeen years.

The cases cited above are undoubted cases of pernicious anemia. They are not selected, but comprise a complete group of patients who have presented themselves to me during the interim of these blood volume studies. I have several cases of apparent cure, but I do not know when the disease may recur. I think that from the new studies now being made, and the new instrumentalities and procedures available, so much can be done in pernicious anemia that it may yet be possible to effect a cure in some cases.

The transfusions were all performed by the syringe cannula system[2] without recourse to saline, citrate of soda or any other foreign material. Lindeman cannulas are painlessly inserted into the veins without skin incision and with record syringes 20 c.c. capacity blood is rapidly transfused from donor to patient. The work is done in such manner that the entire blood mass, regardless of the amount transfused, is outside the body for a period of only 6 to 10 seconds. This is well within the time limits of any possible chemical or physical change of the blood transfused. Reactions are thus eliminated.

565 Park Avenue.

Clinical Notes, Suggestions, and New Instruments

AN INSTRUCTIVE CASE OF PROSTATIC ADENOMAS WITH VESICAL CALCULUS CONCEALED BY A SESSILE PEDUNCULATED MEDIAN LOBE

G. FRANK LYDSTON, M.D., CHICAGO

The case herewith presented has several instructive features from the peculiar arrangement of the prostatic overgrowth. The impossibility of diagnosing the calculus on account of its concealment by a broad sessile pedunculated tumor originating in the posterior median portion of the prostate is unique.

A man, aged 69, a merchant, had always enjoyed unusually good health until the development of vesical symptoms about six years before consulting me. The urine had remained normal in appearance and apparently had not been infected, despite several attacks of retention, which had occurred during the past year and had been relieved by the catheter. Micturition became very frequent, and the disturbance of rest at night had compelled the patient to seek relief.

Examination revealed a large, diffuse, prostatic tumor. This was moderately firm and only slightly sensitive. Cystoscopy revealed a trabeculated bladder and a large median prostatic tumor. The bladder mucosa was in remarkably good condition, considering the attacks of retention and the catheterization necessary for relief. The kidneys apparently were in good condition and the case an ideal one for operation.

I performed a perineal prostatectomy, the operation proving exceptionally easy of performance. Thirteen adenomas of various sizes and shapes were shelled out from the lateral lobes. Digital exploration of the bladder revealed a large, flattened tumor, which fell directly down curtainwise from the lower segment of the vesical orifice. The attachment of this tumor was so tenuous that it may be described as "membranous," the tumor being readily detached by being wiped off, so to speak, from the sublying tissues. Beneath the tumor was found a phosphatic calculus, which was so completely concealed by the overhanging growth that it could not be felt with the exploring finger until the tumor was detached. That cystoscopy or instrumental exploration of the bladder should fail to detect a stone located as in this case is not at all remarkable. The distal surface of the median tumor, which concealed the stone, showed a concavity that perfectly fitted the calculus. It is obvious that this arrangement saved the patient considerable annoyance from the presence of the foreign body. The operation occupied only twelve minutes, the tumor being shelled out with great facility.

The patient left the hospital on the fourteenth day, at which time he was passing urine naturally. At last accounts, two years after operation, the patient was perfectly well.

25 East Washington Street.

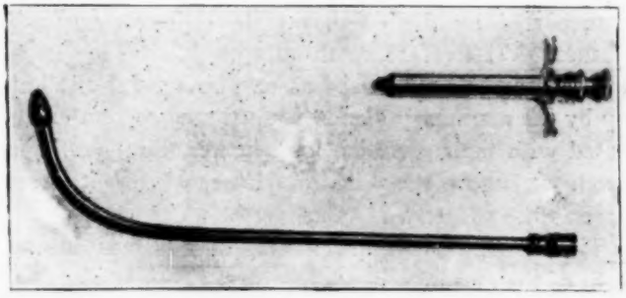
2. Lindeman, Edward: Sample Syringe Transfusion with Special Cannulas, Am. Jour. Dis. Child., July, 1913.

A MODIFICATION OF ULTZMANN'S SYRINGE FOR POSTERIOR URETHRAL INSTILLATIONS

FRANK HINMAN, M.D., SAN FRANCISCO

The proper instillation of solutions into the posterior urethra has a well recognized value in the treatment of many of its chronic inflammatory conditions. The particular object in view is to insert the end of the instrument just beyond the external sphincter. The colliculus should not be touched or reached. It has been shown experimentally in animals that stimulation of a healthy urethra will not produce an antiperistaltic wave, whereas, almost invariably, stimulation of an inflamed colliculus produces antiperistalsis of the vas deferens, which, if we argue from analogy, in men would frequently carry infective material to the globus minor of the epididymis.

The instruments introduced for giving these posterior urethral instillations have been quite numerous. The two types most frequently in use are the Ultzmann cannula, and the Guyon elastic catheter. The latter has the great advantage, because of the bulb at the end, that it can be more accurately placed to a point just inside the external sphincter without any great risk of irritating the colliculus; but it has the disadvantage of not being easily sterilized and, when a great many treatments have to be given, the catheters quickly wear out or become rough and irritating to the urethra. In certain patients with tight sphincters, furthermore, catheters, if at all limber, are difficult to insert.



Metal urethral cannula with bulb: an all metal syringe for urethral instillations.

The Keyes-Ultzmann instrument is a silver cannula of even caliber which has a glass barrel syringe with a metal piston. The original Ultzmann used a record type of syringe, and this could be readily boiled for sterilization; but in frequent boiling the glass barrels of the syringes are often broken, and the absence of a bulbous end makes it more difficult of accurate insertion.

Bumstead introduced a hard rubber cannula, and his instrument was modified by Taylor with the addition of a bulb, as in Guyon's catheter. With the Taylor-Bumstead cannula a glass-barrel syringe was also used. Dick introduced his silver catheter syringe, which, however, must be inserted to the level of the colliculus on account of the multiple perforations at its end.

In the accompanying illustration, an Ultzmann silver cannula is shown on which has been soldered a No. 16 bulb from a metal bougie à boule. The bulb has been tunneled so as to connect with the lumen of the cannula. This allows the cannula to be inserted into the urethra with the same accuracy that can be obtained with Guyon's elastic bulb catheter, and with greater ease, because it is a stiff instrument. The syringe used is an all metal one of the military type which can be firmly screwed to the end of the cannula, making a one piece instrument. This can be boiled and reboiled without injury or wear. It fulfils, therefore, the demands of practical utility, as well as sterilization. Several of these modifications have been in use for over two years at the University of California Urologic Clinic and are apparently still in as good condition as at the beginning.

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SATURDAY, MAY 4, 1918

SOME FEATURES OF MAMMARY GLAND FUNCTIONS

Precisely how the mammary gland elaborates the products that characterize milk as a unique secretion has long been a serious problem of physiology. Much of the interest has centered in the fat of milk, for this foodstuff is readily deposited in various parts of the body and is seemingly also mobilized readily and transported by the circulation to other organs and tissues. With reference to milk production the question has often been raised as to whether fat is taken up by the mammary glands from the blood and eliminated with their secretion, or whether the milk fat is produced within the cell protoplasm, whence it is set free as the suspended globules of milk.

These inquiries permit a new formulation in the light of the more recent studies on the assimilation and metabolism of fats in the body. The investigations of Bloor in particular have indicated an unexpected participation of the blood lipoids, cholesterol and lecithin, in the transformations and transport of ingested fats. Bloor's studies lead to the conclusion that the blood corpuscles take up the fat from the plasma and convert it into lecithin. As most if not all absorbed fat seems to be so transformed, it seems more than likely that lecithin is an intermediate step — perhaps the first stage—in the metabolism of the fats. It has even been suggested[1] that the peculiar anatomic arrangement whereby the fats are thrown into the circulation through the thoracic duct and thoroughly mixed with blood in the heart and lungs before they reach any of the organs of intermediate metabolism, like the liver, may be attributable to the need for conversion into lipoid compounds. If the first step takes place in the blood corpuscles, it is to be expected, says Bloor, that they will be given an opportunity to take up as much of the fat as possible before it comes into contact with the organs and tissues. He adds that it is quite unlikely that lecithin formation is limited to the blood cells. Many types of fixed cells may play a similar part.

In the light of these considerations, a new interest attaches to the phosphorus metabolism of the mammary gland in relation to the secretion of milk fat. The lipoid lecithin, it will be recalled, contains phosphorus. At the Bureau of Animal Industry in Washington, Meigs and Blatherwick[2] have made analyses of blood samples obtained nearly simultaneously from the jugular and mammary veins of milking cows. The plasma was analyzed with the object of determining whether the concentrations of total, lipoid and inorganic phosphorus were appreciably altered during the passage of the blood through the active gland. Under suitable experimental conditions, the mammary plasma had a lower concentration of lipoid phosphorus and a higher concentration of inorganic phosphorus than the jugular. These results are taken to mean that the precursor in plasma of both milk fat and milk phosphorus is either lecithin or some related compound. The ratio of phosphorus to fat in lecithin is about 1 : 18, whereas it is about 1 : 50 in milk. The government dairy chemists argue, therefore, that if the mammary gland takes from the plasma enough lecithin or enough of some related phosphatid body to supply its milk with fat, it gets with it more phosphorus than can be used for the milk, and the excess must be returned to the blood. These considerations are taken to explain the backflow of inorganic phosphorus from the mammary gland to the blood, which occurred in all the experiments. The prospect of new and important contributions to the genesis of the fats and other components of milk thus looms up.

1. Bloor, W. R.: Fat Assimilation, Jour. Biol. Chem., 1916, **24**, 447.

2. Meigs, E. B., and Blatherwick, N. R.: The Relation Between Phosphorus Metabolism and the Secretion of Milk Fat, Jour. Biol. Chem., 1918, **33**, iv.

PROTEIN HYPERSENSITIVENESS AND THE KIDNEYS

The time has long since passed when a variety of cutaneous disturbances, such as erythemas and urticarias, were assumed to be essentially local or skin manifestations. The attempt to manage some of them as if they were merely the indexes of abnormalities due to the peripheral nervous mechanisms has likewise not been advantageous from a therapeutic standpoint. On the other hand, the demonstration that recurring attacks of purpura, angioneurotic edema, erythema and urticaria may be associated with changes in the internal viscera[3] has helped, among other considerations, to emphasize the manifold and perhaps generalized character of the underlying pathogenic factors.

Since some of the pronounced reactions of the skin and mucous membranes — even chronic eczema and asthmatic attacks — have of late been assigned an anaphylactic etiology in part at least, and since hypersensitiveness to certain proteins has clearly been demon-

3. Osler, W.: Am. Jour. Med. Sc., 1895, **110**, 629; 1904, **126**, 751; Brit. Med. Jour., 1914, **1**, 517.

strated in numerous carefully observed cases, the question of the extent to which various other tissues may also be involved naturally arises. In other words, if the skin, the respiratory tract, and the gastro-intestinal canal may be the seat of phenomena of hypersensitiveness to foreign proteins, what other organs may also be involved?

In the case of the kidneys, which are already believed to participate at times in the disturbances of experimental anaphylactic shock, the evidence ought to be obtainable in clinical cases without great difficulties; for the methods of evaluating renal function have been developed with much success in recent times. At the Medical Clinic of the Presbyterian Hospital, New York, the observations of Longcope and Rackemann,[4] on a very limited number of persons demonstrably hypersensitive to foreign proteins, have shown albuminuria, cylindruria, increase in blood urea, profound depression of the index of urea excretion, decrease in the output of phenolsulphonephthalein, and retention of chlorids and water during attacks of urticaria and erythema. It is conceivable that infections which so frequently leave kidney impairment may bring about their results by a somewhat comparable response to foreign bacterial protein. As Longcope and Rackemann visualize the possibility, the reaction in the kidney might be closely analogous to the cutaneous reactions. The peculiar inflammation of the renal structures might accordingly be dependent on an altered reaction or allergy of these structures toward the soluble protein products of bacterial origin or to the proteins of the bacterial bodies themselves. Whether the intoxication causes a general disturbance in protein metabolism in addition to the renal injury remains to be clearly demonstrated.

4. Longcope, W. T., and Rackemann, F. M.: Severe Renal Insufficiency Associated with Attacks of Urticaria in Hypersensitive Individuals, Jour. Urol., 1917, **1**, 351.

STARCH DIGESTION IN EARLY LIFE

Current ideas regarding the ability of the organism of the very young to digest starch have undergone considerable change in recent years. The supposed failure to detect starch-digesting enzymes in the saliva of the new-born was presumably responsible for the conclusion that the body possesses no mechanism for converting starch into absorbable derivatives at an early age. On such a deduction obviously rests the decision as to whether starch in any form can properly be included in the food of this period of life; in other words, the problem of the time when cereal feeding may become a physiologic propriety is here involved.

Careful examination of the saliva of the very young has, however, shown that amylase is by no means always entirely lacking; but even if it were, the possibilities for the digestive utilization of starch are not limited to the efficiency of the saliva. Beside the salivary glands, other structures, notably the pancreas, are sources of starch-digesting enzymes that need to be reckoned with. Certain animals, like the dog and cat, do not possess any salivary amylase at any age; yet they can utilize starch in considerable measure.

Obviously a more adequate method of judging the starch-digesting capacity of the very young consists in examining the feces for unutilized starch after this foodstuff has been fed. Long ago the Berlin pediatrician Heubner[1] reported the outcome of such studies in the case of children a few weeks old. Among others in this country Kerley, Campbell and Mason[2] reported in THE JOURNAL the results of an examination for starch of 324 stools collected under controlled conditions at the New York Infant Asylum from sixty children, all under 1 year of age, who had been fed either wholly or in part on barley water. More than half of these children always showed negative tests indicating complete utilization of the starch thus fed.

Details of such findings might easily be duplicated now in considerable number. In view of the fact that many of the views regarding the question here at issue have been derived by analogy from experimental observations on embryonic and new-born animals, it is not without interest to follow some of the later developments in the domain of comparative physiology. In a once widely quoted monograph on the digestive enzymes of the embryo and the new-born, Krüger[3] reported that in fetal and new-born calves ptyalin is secreted in the salivary glands as early as the seventh month of fetal life, but that while the quantity increases up to birth, even at that time it is too small to be of any importance in the digestion of food. The latest data from the Dairy Division of the Bureau of Animal Industry in Washington[4] show that calves from 4 to 7 days old are able to digest considerable cornstarch added to their milk ration. The capacity seems to increase so that at the age of 3 or 4 weeks more than 90 per cent. of a liberal starch intake may be digested. The dairy chemists who conducted these studies conclude that while it is quite probable that a calf only a few hours old cannot digest an appreciable amount of starch, it can readily be seen that the quantity of starch-splitting enzymes must increase very rapidly in the first few days of life, for the calves under experiment, when only 3 or 4 weeks old, were able to digest a ration, nearly 10 per cent. of the dry matter of which was starch.

The attempt to ascertain the digestive capacities of the young is not to be construed as advice to use

1. Heubner, O.: Ueber die Ausnützung des Mehls im Darm junger Säuglinge, Berl. klin. Wchnschr., 1895, **32**, 201.

2. Kerley, C. G.; Campbell, W. C., and Mason, H. N.: A Further Contribution to the Study of Stools of Starch-Fed Infants, THE JOURNAL A. M. A., Sept. 8, 1906, p. 763.

3. Krüger, F.: Die Verdauungsfermente beim Embryo und Neugeborenen, Wiesbaden, 1891, p. 80.

4. Shaw, R. H.; Woodward, T. E., and Norton, R. P.: Digestion of Starch by the Young Calf, Jour. Agr. Research, 1918, **12**, 575.

starchy foods at any definite age in infant feeding. Whatever will help us to forecast the possibilities of digestion in early life is likely to facilitate rational procedures where dietary intervention becomes necessary.

A MAINTENANCE DIET FOR DIABETICS

In the modern treatment of diabetes by a rigorous dietary regimen, the difficulties presented in certain cases by the necessity of reduction of the intake of all types of foodstuffs often offer a most perplexing problem to the practitioner. When the "strict" diet involving merely the complete omission of all forms of carbohydrate came into vogue, the difficulties seemed to be avertible by an increase in the allowance of protein and fat so that the total calory intake would still be abundant. The foremost aim of many therapeutists seemed to be to conserve the weight of the patient quite as much as to stop the elimination of unburned sugar. But it is recognized today that in a severe case of diabetes not only sugar but also protein and fat may be incompletely oxidized by the organism.

To avoid the always unfavorable production of undesirable intermediary products that thus result, it often becomes necessary to restrict the food intake to a level within the metabolic capacity of the person under consideration. Starvation presents one very effective method of accomplishing such a result, but obviously it cannot be persisted in for any considerable period. One result of the systematic and radical reduction in the food of diabetics—a procedure made practicable in many ways through the investigations of Allen—is the inevitable reduction in the body size of the patient. The fact is often overlooked that when a person has been reduced in weight, his metabolism when he is fed on a low dietary will also be reduced. This may bring his organism within the range of metabolic performances that would not have sufficed for the larger stage of nutrition.

Mosenthal and Clausen[1] have recently pointed out that the widespread use of very limited diets in diabetes has brought up the question of how little the individual may eat and still remain physically and mentally fit. As they rightly point out, the maintenance diet, under ideal conditions, should be sufficiently high not only to enable the patient to live, but also to carry on an average amount of physical and mental work without undue fatigue. The nitrogen equilibrium, they add, represents the lowest possible diet standard that can be exacted of any patient who is to be maintained in a condition of reasonable well-being for any considerable period. To quote Mosenthal and Clausen in their fundamental contention, food which still permits nitrogen equilibrium under these circumstances results in the conservation of the protein tissues, but does not necessarily prevent the loss of fat. This principle has been applied in the treatment of obesity. No living being can afford to lose muscle and glandular tissue indefinitely. How far the fat store of any individual may be depleted with advantage is another question. There is much to be said in favor of allowing the diabetic to become thin, so that his metabolism may be established at a lower level, as has frequently been urged; but it should be distinctly appreciated that this loss of weight should occur in the fats and not in the vitally necessary proteins.

Contrary to what may have been anticipated, these investigators at the Johns Hopkins Medical Clinic have observed that a diabetic may often not only conserve but even amass body protein while on a practically carbohydrate-free diet. According to them, furthermore, diabetic patients may be established in nitrogen equilibrium by a carbohydrate-free diet having a caloric value equal to the standard total caloric requirement. In many instances this may be accomplished at a considerably lower level of feeding. The factors that determine the dietary level at which a diabetic attains a nitrogen balance are apparently very numerous, and not fully determined; glycosuria at times, and infections, even of very slight degree, may necessitate a higher diet to bring about the desired result. A rough estimate of what constitutes a maintenance ration for the diabetic on a carbohydrate-free diet is placed by Mosenthal and Clausen at between 1,500 and 2,000 calories, with the reminder that women and small persons generally require less food than men and larger persons.

1. Mosenthal, H. O., and Clausen, S. W.: The Maintenance Diet in Diabetes Mellitus as Determined by the Nitrogen Equilibrium, Arch. Int. Med., February, 1918, p. 269.

Current Comment

WHERE NEGATION IS A VIRTUE

It is the practice of newspapers and other publications to advertise their own advertising preeminence. Naturally such advertisements usually emphasize the large amount of advertising patronage the papers have enjoyed during a given period, and comparison is frequently made with the amount of advertising carried by competitors. The Chicago *Tribune* this week, in an advertisement three columns wide and seventeen inches high, directs the attention of advertisers in general to the desirability of the *Tribune* as an advertising medium. It points out that during the past year it has led all other Chicago papers "in the advertising of automobiles, clothing, groceries, financial, real estate, musical instruments, furniture, publishers, hotels and resorts, educational and other classifications." Thus far there is nothing unusual in the advertisement. The balance of the advertisement, however, emphasizes the fact that, although the Chicago *Tribune* was *first* in the list of advertising commodities just named, it "was *fourth* in medical advertising." THE JOURNAL has not infrequently expressed its opinion of quack and nostrum advertising. All it

has ever published and all it may ever publish will never show more effectively than does this *Tribune* advertisement, the generally undesirable character of the "patent medicine" business and quackery. A high class newspaper emphasizes the desirability of its pages for the advertising of meritorious products and takes pride in the fact that it accepts less medical advertising than certain of its competitors! To attempt to add to this indictment would be to gild refined gold and paint the lily.

SUGAR REAGENTS

One of the most frequently employed chemical tests by the physician is the "sugar test"—Fehling's, Haines', Benedict's, etc.—whereby a copper solution is reduced by a sugar, forming a precipitate of copper oxid which is generally red. These tests, however, often yield indecisive colors, leading to doubtful clinical interpretations. In testing urine of diabetics, for example, sometimes the reduction causes the formation of a precipitate not red, but orange, yellow, or even greenish. A number of years ago, McLean[1] surmised that these differences were merely physical. More recently two Cincinnati workers[2] have confirmed McLean's views, although at the time of the research, they were unaware of the previous work. Contrary to the impression given by many textbooks, these authors state that in testing urine with Fehling's solution "a dirty pea green solution means just as much from a qualitative point of view as does a red precipitate." The causes for the variations in the tests are such factors as relative degree of concentration, presence of such substances as will have a stabilizing effect (protective colloids), and temperature. After a series of experiments, they concluded that "the different colors observed in the reduction of Fehling's solution by dextrose (or other reducing substance) are nothing more than color changes coincident with a gradual increase in the size of the copper oxid particles." In connection with the foregoing discussion on Fehling's and modified solutions, it is interesting to note that Folin and McEllroy[3] have proposed a copper-phosphate mixture as a sugar reagent, which they claim has several advantages. The alkaline phosphates are less expensive than the tartrates, citrates or glycerin used in other reagents; they do not themselves reduce sugar; and they tend to regulate the degree of alkalinity at a lower level of hydroxyl ion concentration than is obtained by carbonates alone. The copper-phosphate[4] mixture for qualitative determinations is used exactly as Benedict's reagent for sugar, and is of the same degree of reliability but a trifle more prompt. For the quantitative determination of sugar in urine or lactose in milk[5] a somewhat similar copper-phosphate mixture proved very satisfactory.

1. McLean, Hugh: Brit. Med. Jour., 1906, **1**, 147.
2. Fischer, M. H., and Hooker, M. O.: Note on the Colloid Chemistry of Fehling's Sugar Tests, Jour. Lab. and Clin. Med., 1918, **3**, 368.
3. Folin, Otto, and McEllroy, W. S.: Copper-Phosphate Mixture as a Sugar Reagent, Jour. Biol. Chem., 1918, **33**, 513.
4. Directions for preparing the solution for qualitative use: Dissolve 100 gm. of sodium pyrophosphate (U. S. P.), 30 gm. of crystallized disodium phosphate and 50 gm. of sodium carbonate (monohydrate) in about 1 liter of water. To this solution add 13 gm. of copper sulphate ($CuSO_4.5H_2O$) previously dissolved in 200 c.c. of water. The solution is stable.
5. Folin, O., and Denis, W.: The Determination of Lactose in Milk, Jour. Biol. Chem., 1918, **33**, 521.

THE RESPONSE TO THE CALL FOR MEDICAL OFFICERS

A few weeks ago we published the letter of the Surgeon-General asking the American Medical Association to secure 5,000 additional medical reserve officers; also the announcement that the War Committee of the American Medical Association had arranged to call into conference the secretaries of the constituent state associations in order to outline an efficient method for securing the necessary men. The physician who reads the report of this conference in this issue of THE JOURNAL[1] will realize that the American Medical Association is answering this call with an energy and a utilization of its resources which cannot fail to produce the desired increment. As the secretaries of the state associations outlined the work thus far done in their respective states and pointed out the defects of the system which, although it has produced to date 22,000 physicians, has nevertheless permitted many defects, it became apparent that the task before the profession is important not only in securing physicians to meet the present demand, but for the future, whatever it may be. In securing over 20,000 volunteers some communities may be suffering through the taking away of men needed in those communities. Some industrial plants may be suffering through the removal of physicians whose duties in caring for the health of thousands of industrial workers were at least as important as any task which they might undertake in connection with the military department. The organization of the state for war means the utilization of every man to the best possible advantage. The secretaries of the state associations were firm in their belief that they would be able to secure the men needed for the new increment. Their conference was especially important with a view to meeting the future needs of the country, whether the war lasts one year or five years or ten years.

1. See page 1302.

Banana as Food.—In an article in the *Scientific Monthly* (January, 1918) Prof. Samuel C. Prescott of the Massachusetts Institute of Technology says that the banana is a high power fuel food and is also rich in desirable salts. He quotes the table of Bulletin 28 of the United States Department of Agriculture showing the caloric value per pound of the edible portion of the banana and other foods, from which the following comparisons may be selected: banana, 460; squash, 215; onions, 225; parsnips, 300; green peas, 465; cabbage, 145; green corn, 470; fresh Lima beans, 570; macaroni, cooked, 415; string beans, 95; clams, 240; lobster, 390; oysters, 230; halibut, 470; whole milk, 325; apples, 290; cherries, 365; figs, 380; grapes, 450; oranges, 240. It will thus be seen, as Professor Prescott says, that the banana exceeds in real food value many foods of different classes which are in almost daily use, such as whole milk, boiled oatmeal, shellfish and other fish and fresh vegetables, and according to a bulletin of the Life Extension Institute, prepared by Dr. Eugene Lyman Fisk, presenting a table of raw materials in common use, it is the cheapest. In concluding his article Professor Prescott says that the banana is practically the only food which during the last two years has not shown a marked increase in price, and will stand comparison with any food on the market on the basis of caloric costs. Everything, he says, points to its continued favor not merely as the "poor man's fruit," as it has sometimes been called, but as a staple food for universal use.

Association News

WAR CONFERENCE OF SECRETARIES OF THE CONSTITUENT STATE ASSOCIATIONS OF THE AMERICAN MEDICAL ASSOCIATION

Held at the Headquarters of the American Medical Association, April 30, 1918

The meeting was called to order by Dr. Alexander R. Craig, secretary of the American Medical Association. Dr. Thomas McDavitt of St. Paul, chairman of the Board of Trustees, was elected chairman, and Dr. A. R. Craig, secretary.

Dr. McDavitt emphasized the great importance of the meeting. He said the government had made a new call for physicians. There are already in the service, in the different corps, at the present time about 20,000 physicians. The issues involved are so great that the government is anxious to have an excess if possible. The 5,000 physicians that are requested now do not provide for an excess. The ways and means of filling these ranks will depend largely on the successful issue of the action taken by this conference.

The roll of the states was called, and the following secretaries answered as being present:

Alabama—H. G. Perry	Nevada—M. A. Robinson
Arizona—D. F. Harbridge, acting	New Hampshire—D. E. Sullivan
Arkansas—C. P. Meriwether	New Jersey—Thomas N. Gray
Colorado—Crum Epler	New Mexico—R. E. McBride
Connecticut—J. E. Lane	New York—Floyd M. Crandall
Dist. of Columbia—H. C. Macatee	North Dakota—H. J. Rowe
Illinois—W. H. Gilmore	Ohio—E. O. Smith, president
Indiana—Chas. N. Combs	Oklahoma—Horace Reed
Iowa—T. B. Throckmorton	Oregon—Clarence J. McCusker
Kansas—L. F. Barney, acting	Pennsylvania—Cyrus Lee Stevens
Kentucky—P. E. Blackerby, special	Rhode Island—J. W. Leech
Louisiana—Paul T. Talbot	South Carolina—Edgar A. Hines
Maine—Bertram L. Bryant, acting	South Dakota—R. D. Alway
Michigan—F. C. Warnshuis	Texas—I. C. Chase, acting
Minnesota—Thomas McDavitt	Utah—W. Brown Ewing
Mississippi—T. M. Dye, acting	Vermont—W. G. Ricker
Missouri—E. J. Goodwin	Virginia—Paulus A. Irving
Montana—E. G. Balsam	W. Virginia—J. Howard Anderson
Nebraska—Joseph M. Aikin	Wisconsin—Rock Sleyster

WORK OF THE WAR COMMITTEE OF THE ASSOCIATION

The chairman introduced Dr. Simmons, who, he said, had been in close touch with the government authorities and would give information on the subject of the conference.

Dr. Simmons said that we are today confronted with what some regard as a serious proposition but that he did not so regard it. He has always felt that the medical profession would respond to whatever call was made on it, and that the response has been made. Practically 23,000 physicians volunteered for the Medical Reserve Corps. On April 26, 18,693 had accepted commissions. We may estimate that at least between 1,000 and 1,500 will be added to this number from those who have already been offered commissions. At the beginning of the war there were 449 medical officers in the regular corps. Today there are 20,851 in the service; in the regular corps, 843; in the reserve corps, 18,693; in the National Guard, 1,204; in the National Army, 111.

When the call was first made it was for 21,000 physicians, estimated on the basis of an army of 3,000,000. There are supposed to be seven medical officers per thousand; it is recognized that this is not enough and they estimate now ten men to a thousand.

WORK OF THE ASSOCIATION

It might be well for a moment to say what the American Medical Association has done. In April, 1917, THE JOURNAL began to appeal to the medical profession. In that month we published a special appeal and with it an application blank—64,000 blanks—for both the Regular and Medical Reserve Corps. Four weeks later an application blank—67,000 this time—was again inserted in THE JOURNAL.

The next work done was that done ostensibly by the Surgeon-General, who assigned to our office Major J. R. McKnight, who is present this morning. I have here the report that Major McKnight made to the Surgeon-General, July 19. The work was begun May 28, and this report covers the work up to July 16. At that time the total number of circulars addressed was 39,710; the reply cards received were 17,874; requests for information answered by personal letter, 764. This final analysis of this work, I am sorry to say, is not at hand. Analysis of the cards received show that 2,786 immediately applied for commission; 1,781 stated that they would reply soon, and 1,990 that they would apply within a few weeks. Various reasons were given for not applying, such as physical disqualifications, dependents, etc. This work was done, as I say, ostensibly by the Surgeon-General's Office, in so far as Major McKnight superintended it; but the Association furnished the material and did all the printing; everything was sent out from this office—the application, letters of appeal, information for those who responded as to what to do, the list of examining boards, etc.

THE NEW CALL

Now this drive, if I may call it so, because that is what it is going to be, is to be done in the name of and by the American Medical Association and its constituent associations. The responsibility is on us to make good.

Dr. M. L. Harris said that the Association, through the Board of Trustees, has been called on by the Surgeon-General to assist. A special meeting was called and a committee appointed to look after this work directly, which for want of a better name was called the war committee. This committee has been in touch with Washington ever since its appointment, and has attempted to help the department by placing at its disposal the entire American Medical Association and all its machinery, including, of course, THE JOURNAL, which as you know already had been doing what it could from the beginning.

Now that we have been requested to assume this further task of enlisting 5,000 additional doctors for the Army and to secure this number in a short time, this meeting was called to distribute the burden down to the individual unit; in other words, those who are most familiar with local conditions, so that this could be done with the least harm, we may say, to local communities and with the greatest dispatch. The idea is to get the doctors where they are most available and where their withdrawal would mean the least trouble in properly taking care of civil conditions. Not only the general population, but industries must be considered; in fact, all the factors that are essential to the organization and maintenance of the Army.

The purpose of this meeting is for all of us to discuss the matter and to suggest means. The general idea which may be presented, of course for your approval or modification and ratification, is that in addition to what we may call the national war board, that is, the committee of the Association representing the Board of Trustees, each state society have its state war committee represented by its officers, and that each county have a county war committee, the committees to be small in number so that they may work rapidly and expeditiously, the idea being that each county naturally is most familiar with its own local conditions and can best determine who is most eligible for the service in the sense of the needs of the community. In the same way the state as a whole is more familiar with general conditions and can work out its own problems better than any one else. It is hoped that by the organization of these committees the work could be carried out with dispatch and with the best results, having in mind the needs of local conditions and the needs of the Army.

The chairman introduced Dr. Charles Mayo, President of the Association. Dr. Mayo said that this is really to be a drive like a liberty loan drive, as Dr. Simmons says. The medical profession was almost the first to become well organized before the war began, because we have had an organization for a long time. So far as the Association is concerned, it was easy for organized medicine to get the

names of the men we needed to do their bit. In fact, they had been doing their bit by going over to help Britain, France and Serbia in every possible way.

DISORGANIZATION

Our profession is organized, but around the outskirts is a great deal of disorganization that has been held over from the methods of the profession in advancing their work in education. In the early period there were in Washington about eighteen bureaus, boards and departments that had to do with medicine. Each of these bureaus and departments spends a great deal of money, and there is absolutely no coordination and no one will let go. Each head wants to be chairman of the committee to look after it. The more we study the question, the more we find that there will be no change until we get a real department of health with an officer in the cabinet to look after it, and then we will have an organization.

CONDITIONS IN FRANCE

A serious problem comes to mind in relation to France. There they have not had any medical schools running for four years. In England the same thing is true. With the natural death rate of doctors and no new degrees granted, it means a great deduction, and the danger that when the schools have started again, there will be lowered standards. I think organized medicine in this country did great service in seeing to it that the government did not in developing draft laws break up the medical schools. I think that has been one of the greatest features shown by organized medicine.

A FRENCH MEDICAL SCHOOL

The thing I have been hoping for is that funds may be obtained to develop a great medical teaching institution in Paris. From letters received from the French government, the president and others high in authority, this idea is approved. We could move our men over there a thousand at a time and they could be trained by men at the front who for four years have had at their fingers' ends things that we cannot possibly get in this country. I would suggest to turn over now for teaching purposes two thirds to the Americans and one third to France, and after the war make France a present of it, and make Paris the center for American medical study in Europe. It takes a lot of money to run such an institution, but yet it looks as though the money might be raised. It is estimated that it would take from $100,000 to $150,000 under present circumstances to run such a school for a year. It is most difficult to bring about such a thing under government control. Something like that must be planned by organized medicine, but not by government organized medicine, and turned over to the Surgeon-General for the period of the war. Surgeon-General Gorgas could easily detail men in the service for temporary duty for the education of these men and give them one month or two months of lectures, and without disorganization we could give our surgeons the absolutely necessary instruction and all around service we have been trying to develop in a more or less haphazard way.

The chairman introduced Dr. Alexander R. Craig, secretary of the American Medical Association. Dr. Craig said: It may be well for me to try to supplement what has been said of the work of the Association with your cooperation. Lists of names of applicants in the Medical Reserve Corps are being sent to this office and are reviewed in connection with the data concerning physicians of the country. So far as the war is concerned, we have on file here at the office the names of the men who have made applications for commissions, with a certain percentage of error due to loss of lists; but we can tell you every one in your state who has made application, who has been commissioned and who is under orders in a large percentage of the cases, and we can tell something about certain individuals as to personal character and professional reputation. That is a point, however, on which we need your help and the help of the county societies. We have a list of the men under orders in each of the several states. We have given to you also a preliminary table of all men in the United States. There are errors due to the fact that we report the men at their permanent addresses, but you will be able to determine how certain groups of doctors have responded to the call and where further enlistment may be obtained after we have available this honor roll. We wish also to hear from each state secretary how he deems this draft can best be conducted in his state. I would suggest that we resolve ourselves into a committee of the whole for the purpose of deciding how we can best put these things over.

The chairman introduced Dr. A. R. Mitchell of Nebraska, member of the war committee of the Board of Trustees, who said: The statements made by Dr. Harris cover everything that I might say. The idea is to get concentrated work and get it quickly. I would call for a committee to draft resolutions.

MOTION TO APPOINT COMMITTEE ON RESOLUTIONS

Dr. E. J. Goodwin of Missouri said: I believe, in view of the fact that we are pretty well informed of the object of this meeting, that it would be well to appoint a committee on resolutions first, and then discuss the topics that the committee suggests. I, therefore, move that the Chair be authorized to appoint a committee of three which shall hand in such resolutions which shall seem to cover the purposes of the meeting for consideration at the afternoon session.

The motion was seconded by Dr. E. G. Balsam of Montana.

Dr. Crum Epler of Colorado asked whether, if the talks were made now, the ground would be gone over again in the afternoon when the resolutions were presented.

Dr. Goodwin said that the object of his motion was to have the committee appointed first so that it could listen to the discussion and then bring in concrete suggestions for action during the afternoon.

The motion of Dr. Goodwin was carried, and the Chair appointed the following committee on resolutions: Dr. E. J. Goodwin, Missouri; Dr. F. C. Warnshuis, Michigan, and Dr. D. E. Sullivan, New Hampshire.

ALABAMA

Dr. H. G. Perry, Alabama, said: One of the troubles under which we have been laboring is a multiplicity of organizations, all trying to do the same work. I am here today as the secretary of the state organization of Alabama, but am also secretary of the state committee of National Defense, Medical Section, and member of various organizations and activities. We organized in Alabama early in 1916 with the retiring president of the state association as president of the organization. That was before the State Committee on National Defense was formed. When the governor was called on to appoint this Committee on National Defense, he took the organization we already had and made his committee identical with the committee already raised. In Alabama we have an organization of medical men in every county in the state who are charged with the execution of the medical laws of the state in their respective counties, and have also jurisdiction such as medical societies have over the professional side of medicine. In each society there are five men who constitute a board of censors. Our central committee organized for the purpose of increasing the membership of the Medical Reserve Corps in the Army. They did not have to go very far in order to get a working committee in every county, and these committees in each county got very busy. A little later we found that with sixty-seven committees and sixty-seven counties, it was hard to get frequent reports and sometimes hard to get cooperation, so a good deal of the work was done by the central committee, the president of the committee and the secretary. Up to April 1, according to the Surgeon-General's Office, we had 333 men to whom commissions had been offered. We have endeavored time and again to get the number of those in actual service, but up to this time have failed to get this list or a list of those who had accepted their commissions. We know of a good many who have been discharged. Out of 333 that we know have been tendered commissions, 134 were in actual service outside of the largest county, which adds another hundred, making 234, leaving ninety-nine still unaccounted for. They will constitute a large problem when we start into this new draft. The thing we have to work out is some plan by which we can judge the local conditions in such a way that we can go to a certain county and put our hands on a certain number of men without reducing the necessities or without jeopardizing the welfare of the civil population.

ARKANSAS

Dr. C. P. Meriwether, Arkansas, said: The Arkansas Medical Society made a complete survey of our state last October through our councilors. The State Committee of the

Council of Defense was inactive. Our report was made to the National Council of Defense, but we got little encouragement; until the last three or four weeks, the Council of Defense in our state had done practically nothing. About three weeks ago, I was made secretary of the state committee by appointment from Washington. The status of affairs in our state is possibly a little different from that of most of the states. We have about 2,680 doctors in our state according to the directory. As we all know, up until 1909 the laws of Arkansas controlling the practice of medicine allowed almost anybody to get a license. As a result we have thirty-seven or thirty-eight undergraduates licensed and carried in the directory. We have from 225 to 250 undergraduate doctors, two commissioned in the Medical Reserve Corps. At the request of Dr. Craig, secretary of the Association, we called a meeting of the officers of the state medical society and have sent a letter making a special appeal to each member of the state society. We have notified the state eclectic society and the homeopathic society to meet with us in Jonesboro, May 7 and 8, at which time the Council of National Defense will send to our meeting Major John T. McLean of the Medical Reserve Corps who will be in a position to enroll all of the men and examine them at that meeting, so that we will get them while they are warm and in the notion. In Newton County they have ten doctors, and not a single one is a graduate. Yell County has forty-five doctors; eighteen are under 45 and only seven are graduates. That is a situation that does not confront many other states. But as Arkansas came over in her Liberty Loan allotment, the first on top, we are coming over with our men, too.

ARIZONA

Dr. E. F. Hardrige, Arizona, said: Arizona is a community of magnificent distances. Physicians frequently travel 50 or 60 miles to see patients. Last week we held a state meeting and certain efforts at drafting a resolution as to what we are willing to follow, were made. We have peculiar conditions on account of the great distances. In Graham County there are over 6,000 square miles with only three physicians. In Arizona, we have large copper industries that must be kept going. In all these institutions, the medical staffs have been greatly depleted. In one company of twenty-one men, five have responded and are already in the Army. In another county, out of seventeen men there are five who have gone. That is a proportion of 25 or 30 per cent. On receiving the call for this meeting, I immediately telegraphed to each county secretary to give me the name, age and number of every physician that had accepted the call or was under orders. I received a list of 217, of whom forty-two have responded. The point I wish to raise is that we are willing to do everything that is possible, but we have an industrial situation that must be taken care of.

COLORADO

Dr. Crum Epler, Colorado, said: I will confine my remarks to the position taken by the physician who does not go. It is not a matter of a lack of patriotism. In my own state we have had forty-four apply according to the quota given us through the medical section of the Council of National Defense. Now why is this? The first proposition is that Colorado has been properly designated as a finishing place for "lungers," and we have in the state a considerable number who did not get finished entirely but who are in good physical condition, healed lungers, doing good business, and yet under the present rules they are not eligible for the reserve corps on account of their histories. It would appear to me after visiting a number of the cantonment camps and seeing some of the healthy, robust, red-cheeked young men there in the division hospitals, that they could be put on more active duty, and a limited service might be provided for the healed lungers in these base hospitals. With the large number in the service and the other large number who have accepted commissions but have not been called, men ask, What is the use of breaking up a business that has taken years to build up when not all the commissioned men have been called? I know fifty men, some of them as good men as have been commissioned, two of them in one town, who have not been called into active service. Another condition is that men are holding commissions too low for them. Physicians are asked to accept commissions lower in rank than are given to their assistants. That is a condition that exists in Colorado and other states in which I have talked. Another condition is that the deadwood about the cantonments needs to be removed. When the Surgeon-General says "We are now asking you to join the cause; we need you," physicians will go—every one of them.

CONNECTICUT

Dr. John E. Lane, Connecticut, said: Connecticut is pretty well ready on the medical side. From the first of last October the medical society has worked with the Council of Defense—the men on the medical section—and the secretary's office of the state society has sent out circulars. There is perfect harmony, and if this scheme goes through we can make a war committee in a week in our state. Connecticut is prepared to furnish her quota and more. In Connecticut it would be useless to have county committees; the state is small and the state society can handle it all. By that plan the personal equation of a committee working in a local community is eliminated. Some counties have only seventeen physicians. The state society can do this work without arousing personal antagonisms. The chairman of the State Council of Defense, Dr. Brown, has done magnificent work. The physicians have been classified into those who should go and those who should stay at home, and Dr. Brown has personally gone through the state asking physicians to appear before them, and he knows the conditions with reference to every physician. One thing we need is direct cooperation so that the work we have done will not be undone. Some months ago the National Council of Defense sent out a questionnaire that we were to classify these physicians and should not injure any communities. These answers were included in the Surgeon-General's letter two weeks ago. Within three days' time the State Council of Defense in our state without getting information from the local council sent out two letters urging men to join the Medical Reserve Corps of the Army and Navy. The State Council would have taken the very men who should have been left—the teachers in the medical schools and the like—thus spoiling the work we had done.

DISTRICT OF COLUMBIA

Dr. H. C. Macatee, District of Columbia, said: The medical society of the District of Columbia occupies a position equivalent to the county society in the states. The data published in the list of the American Medical Association give the district 1,514 physicians. One of our great difficulties has been this exaggerated estimate for the District of Columbia. The telephone directory which covers the whole district gives only 759 names. That would cover all the men who are active practitioners of medicine, and therefore covers all the men available from that jurisdiction. On that basis instead of having a percentage representation of 12.8 in active service, we have a percentage representation of 27.6. The medical society of the District has a membership of 560 and a male membership of 530. It has 133 in the various public services, making a percentage of 25. In looking over the lists, making a rough estimate of the availables, I find 189 men still to be approached in this matter. Out of these, many are members of the medical society; many of them will be found unavailable by reason of civil needs, physical disqualification, etc.; so that for the District we cannot approach the matter from the basis of a quota. I shall recommend to our society that we simply cull over all the men possible, keeping in view the needs of the community, and put all those men to be commissioned and leave the public services as these need. I feel that I must also endorse the remarks of the secretary for Connecticut that there is a great deal of feeling in Washington on account of the disparity on account of commissions granted. These commissions are granted on some basis that we are unable to fathom, because the relative standing of the men in the communities is not taken into consideration. We are strongly of the opinion that commissions should be made of the lowest grade and that promotions should go according to merit. I am also secretary of the state committee of the Council of National Defense, and we have been unable to do any effective work because we have been ignored, superseded or overridden by central authority.

ILLINOIS

Dr. W. H. Gilmore, Illinois, said: I understand that the idea of the meeting is to get the 5,000 physicians as quickly as possible. The discussion has been too general. We should come down to the point of how to go about it to get these

men. As secretary of the State Council of Defense, and chairman of the state licensing board, particularly of the latter board, I have been in personal contact with men all over the state. I have made two trips over the state recruiting for the Medical Reserve Corps. From Springfield south I have found that 45 per cent. have accepted commissions, and from Springfield to Cook County, 18 per cent.

I have no confidence in anything being done locally. If it comes direct from the American Medical Association to these men we will get results. How are you going to do it? How can you do it? We have a list of the men under 45. We have the number in the reserve corps. Let the letter from the President and Secretary of the American Medical Association say to John Jones, "You are of the proper age and qualifications. Your county is short so many men. Get together with the men who have not enlisted in the Reserve Corps and decide who is to go, because some of you have to." They will go then. When I came back from my trip I was cocked and primed to recommend the draft for physicians. We had the day set to discuss the draft for physicians. An editorial in THE JOURNAL knocked it into a cocked hat, and I have never ceased to believe that editorial was inspired.

INDIANA

Dr. Charles N. Combs, Indiana, said: Dr. Gilmore's pertinent remarks offer a definite field for some work. Some criticisms will have to be cleared away before the men will take seriously this letter even from the American Medical Association. There has been a difficulty encountered because of lack of statements from the Surgeon-General's Office. The statements issued from various sources leave the mind in confusion. There is difficulty on account of statements regarding the mortality rate of physicians in the service; on account of resignations and discharges, which of course men staying out of the service read with avidity. There is difficulty caused by the long wait for assignments that has been spoken of, and also on account of unfair distribution of favors as to rank by which some men who have not a high standing in the medical profession are given higher rank than others, for some unknown reason. The printing of news, even in the newspapers, regarding the lack of definite need for men is unfortunate; also the uncertainty as to what assignment men are going to get when in the service. The War Department issues but one answer, and that is that you will probably be assigned to the work you are accustomed to doing, but no promises are made. In my own experience it seems to me that the government requires us to go back to the experience of twenty years ago and be general specialists. We are planning to have meetings in every county in the state on Lusitania Day, May 7. We are going to get men in uniform assigned to these meetings so that the men who enlist will have the stronger appeal. Men have been enheartened on account of the survey made by Dr. Squier, for conditions are changing and more attention will be paid to particular qualifications along certain lines.

IOWA

Dr. T. B. Throckmorton, Iowa, said: Conditions that exist in Iowa are no different from those of other states, and I cannot help but feel that some of the difficulties of raising men for the Medical Reserve Corps have come through ignorance. I have learned more regarding the needs of the corps during the last week or ten days than since the declaration of war. We have had no organized effort made in the way of obtaining volunteers save that which came through the Council of National Defense, through the medical section of the State Council of Defense. Nothing succeeds without organization. In the first place, we have had no one competent in Iowa to answer questions asked by applicants concerning admission into the Reserve Corps. Early in the season it was hard to obtain blanks for those who did apply. No one was there to tell the doctors where to go for physical examination, and above all, we had no one there competent to explain to the doctor when he called by phone or in person as to the real necessity of volunteering. I did not know until a few days ago really how many men the War Department wanted from Iowa. I recently got a letter saying that 462 were accepted and commissioned, and that they expected 350 more. That is the first information I had. A man is not going to give up his business unless there is a real necessity, and while I am not here to pick differences with these gentlemen concerning Iowa's apparent lack of patriotism, if it may be so stated—because we have from 12 to 13 per cent. of the profession now in the Reserve Corps—still I think it is a question of ignorance. There is going to be great good from this conference, because we are going to put the facts before physicians and show them there is a necessity of obtaining volunteers in the Medical Reserve Corps. I am here to listen to the dictates of this conference and carry back whatever wishes it has, and so far as I am concerned I am willing to do my bit with all my heart and soul.

KANSAS

Dr. L. F. Barney of Kansas said: I am not prepared to make a report from Kansas. The secretary, Dr. Hassig, left recently for service and I am not in position to state what conditions are. Dr. Throckmorton has perhaps expressed conditions in Kansas very well. There has been no knowledge of conditions and what is needed. It is necessary for some one to make up the minds of a great many physicians. We have got to have something brought to bear on the individual physician who is convinced that his conditions are different from those of some one else. Each one has his own reasons for not going, and under the best plans it has been pretty hard to get away from those individual reasons; but when we have these things pointed out, and when some one in authority goes to them and says, "This man is more available for service than some one else," I think we shall have a better response.

KENTUCKY

Dr. P. E. Blackerbie, Kentucky: Dr. A. T. McCormack, the secretary, is now in the service. Dr. J. N. McCormack was not able to be here and asked me to represent him. As long as Dr. Arthur McCormack was in Kentucky following up the work of raising the quota, things went along well, and as a climax at the meeting of the State Association forty Kentucky physicians were examined at the meeting, and 70 per cent. of these were commissioned. Kentucky has 540 men commissioned. I do not know how many are actually in the service. Unfortunately, two things militate against our growing: The first one was the unfortunate court-martialing of the retiring state president on charges on every count of which he was vindicated. That had some influence in the state against men offering their services. And then again, as the doctor from Colorado said, a lack of understanding of the men in the service as to the time they would be called for active work had its influence in holding back men. We have just prepared a classification of physicians in Kentucky in which we are trying to determine the number of men available out of the 1,500 physicians not examined, and in this classification we are showing the communities and the required number of physicians, their family relations, whether they have children or not, etc. On this list there are 460 men yet available, and we hope without draft to get at least half of these, which will keep Kentucky in the same position she now has. I am by Dr. McCormack requested to say that if this conference recommends the draft, Kentucky is behind it, or in whatever move is instituted here. Personally, I am very much in favor of the move of the gentleman from Illinois (Dr. Gilmore) to the effect that the American Medical Association make a personal appeal to every available man in each state in the United States to go into the service. I think it ought to be stated in that appeal emphatically that the result of this work of the American Medical Association would forecast either a draft or not a draft.

LOUISIANA

Dr. P. T. Talbot, Louisiana, said: I was recently elected secretary of the state society. In Louisiana conditions are about the same as mentioned by the other secretaries. The state medical society in session last week passed resolutions endorsing the movement of the American Medical Association, and wants to lend its best efforts to do anything the American Medical Association desires. As secretary of the Orleans Parish Society for a number of years, I have been intimately associated with physicians throughout the state. We feel in Louisiana that if we have been negligent in this response, it has been due almost entirely to the fact that the doctors did not realize that they are needed. They did not realize that because the needs have not been expressed through organized medicine. We feel that if this plea comes from the American Medical Association, through its sub-

sidiary societies, there will be excellent results; and the state medical society is anxious for some plan to be suggested by this meeting to enable it to fulfil its purposes to the country. In regard to the solution of this problem, the securing of enlistments through organized medicine, the state medical societies, appears most expedient to me. The Orleans Parish Medical Society, representing the largest medical center in Louisiana, has instructed me to say that it wishes to lend all possible aid in securing the enlistment of physicians. They are ready and anxious to go. They are waiting for a definite call from the American Medical Association to respond, and I am sure when the call is sent out, Louisiana will come forward with all that is needed.

MAINE

Dr. B. L. Bryant, Maine, said: The population in our state is scattered. The great majority of towns contain from one to two physicians, and often they have to cover a great deal of territory. It is going to be quite a problem to get the quota from the state of Maine, but I think it can be done after a careful reorganization. There has been practically nothing done outside of the work of the Council of National Defense. The heads of that council are now in the service, and since they went away several months ago, practically nothing has been done in the organization. I think we have in the service practically 150. The other fifty must come from the populous districts—the cities—to a great extent. Our next state meeting comes June 5. We stand ready to put the plan through. I want to get information of what has been done, which our Council has not been able to get hold of. It is purely a matter of getting a plan and then adopting it in the state. I believe then the state will come up over her quota. The men who have gone have come irregularly. For instance, out of one town with eleven doctors, five have gone. Out of another town with fifty, sixteen; in another with 160, only twenty-four; and another city with twenty-two has sent none. It is simply a question of organization, and then for the organization to get after these men. The best way to do that is what I came to find out.

MICHIGAN

Dr. F. C. Warnshuis, Michigan, said: There has been a multiplicity of effort. Many things we have attempted to do have been undone. Many things we have done have not succeeded. I think we have got to learn as doctors one thing: that we must not ask ourselves what are we going to get out of it, but what are we going to put into it; not what our rank is, but what is our individual part to do to lick these contemptible curs, the Huns. I myself cannot be a lieutenant. I have resigned three times and made application, and they have said, "You stay at home. You are of more value there." So far as I am concerned, until it is over I shall remain a high private in the rear rank, but I will do what I can. It is a question we must carry home: not What are you going to get out of it? but What are you going to put into it? We are going to bear the test, and the sooner we realize it the sooner we are going to come across. I know we shall go home and send to General Gorgas a message not to worry for one minute; that he is going to have sufficient doctors to take care of the work in this war. The great problems are what we are going to do to supply the men for the Army and what we are going to do to protect the communities at home. We cannot take away all the men from the rural districts. We have already found conditions whereby communities are totally bereft of medical attendants. During the winter months I traveled miles and miles to visit the only physician in a county, who himself was ill with pneumonia. We must take the doctors from the larger cities, and we need no further organization. We have the organization. I do not believe we have need for further state committees and county committees if we have good secretaries. The secretary will respond all that is necessary to you as state secretary if you approach him in the right manner. I think our conference should resolve itself into a committee to determine how we are going to get these men. I myself am inclined to have a draft made of every doctor, if necessary. Put every man in the Medical Reserve Corps and then perfect our organization so that when the Surgeon-General needs doctors he can say, "We want fifteen, or fifty, men from your state." And when that man gets your order he is going and there will be no dearth of doctors.

MISSISSIPPI

Dr. T. M. Dye, Mississippi, said: I am acting secretary; our secretary is in camp. I am here to learn what we can do in Mississippi. All the work done in Mississippi has been done through the Council of National Defense. The state association meets two weeks from today, and we are prepared to do anything you tell us to do. We have no advice to give.

MINNESOTA

Dr. Thomas McDavitt, Minnesota: We are up to the quota as far as the doctors are concerned, and we are going to get a lot more. The principal trouble we are having is a dearth of doctors in the rural communities. We have a great sufficiency of doctors in the cities. They should be transferred. I believe Uncle Sam is going to make a draft of some kind and transfer men from the cities to the country where they are needed, and that will be the solution of this whole question.

The reports of the remaining state secretaries will appear next week.

AFTERNOON SESSION

The conference reconvened at 2 p. m. and was called to order by the Chairman, Dr. Thomas McDavitt.

The following is an abstract of the proceedings of the afternoon session. A complete report will appear next week.

The following state medical associations were called on for reports, and each state secretary or his representative gave an epitome of the work that had been done and is now being done in the state: Missouri, Dr. E. J. Goodwin; Montana, Dr. E. G. Balsam; Nebraska, Dr. Joseph M. Aiken; Nevada, Dr. M. A. Robinson; New Hampshire, Dr. D. E. Sullivan; New Jersey, Dr. Thomas M. Gray; New Mexico, Dr. R. E. McBride; New York, Dr. Floyd M. Crandall; North Dakota, Dr. H. J. Rowe; Ohio, Dr. E. O. Smith and Dr. B. R. McClellen; Oklahoma, Dr. Horace Reed; Oregon, Dr. Clarence P. McCusker; Pennsylvania, Dr. Cyrus Lee Stevens, Rhode Island; Dr. J. W. Leech; South Carolina, Dr. Edward A. Hines; Texas, Dr. T. C. Chase; Utah, Dr. W. Brown Ewing; Vermont, Dr. W. G. Ricker; Virginia, Dr. Paulus A. Irving; West Virginia, Dr. J. Howard Anderson; Wisconsin, Dr. Rock Sleyster.

Dr. Arthur Dean Bevan, President-Elect of the American Medical Association, spoke of the importance of a survey of every state with a view of recording exactly how many medical men there are in each state, and how many have applied for commissions in the Medical Reserve Corps. This work, he said, can be perfected, as is contemplated and as requested by the Surgeon-General of the Army, by the American Medical Association through its county and state societies.

The Committee on Resolutions, consisting of Drs. E. J. Goodwin, Missouri, chairman; F. C. Warnshuis, Michigan, and D. E. Sullivan, New Hampshire, reported through its chairman, Dr. Goodwin.

The report was freely discussed by Drs. G. H. Perry, Alabama; C. L. Stevens, Pennsylvania; Crum Epler, Colorado; R. E. McBride, New Mexico; Thomas N. Gray, New Jersey; T. B. Throckmorton, Iowa; J. E. Lane, Connecticut; W. Brown Ewing, Utah; F. C. Warnshuis, Michigan; I. C. Chase, Texas, and others. The report was finally modified by substituting the following:

Moved that the secretaries of state medical associations request the presidents of their respective state associations to appoint a war committee of three immediately, one of whom may be the secretary of the state association, for the purpose of coordinating the profession of each state for war work.

Motion seconded and carried.

Dr. W. Brown Ewing, Utah, moved that it be the sense of the conference that each secretary immediately on arriving home shall elicit the support of every county society in the state association, in order that this important matter may be brought to the attention of physicians as soon as possible.

Dr. F. C. Warnshuis, Michigan, moved that the chairman of the conference (Dr. Thomas McDavitt) be delegated to represent the state secretaries at the conference to be held at Washington, Saturday, May 4.

Seconded and carried.

Dr. I. C. Chase, Texas, moved that the conference request the War Board, after conference with the Surgeon-General, to draw up a form of questionnaire as a guide for the collection of the data regarding individual doctors throughout the United States.

Seconded by Dr. Rock Sleyster and carried.

On motion, which was duly seconded and carried, the conference then adjourned.

Medical Mobilization and the War

Body of Colonel Reno Recovered

The body of Lieut.-Col. W. W. Reno, mysteriously lost at sea while he was returning from France, has been recovered off the coast of Nova Scotia, and has been sent to Cleveland for burial.

Wounded in Action

Capt. Hyman Green, M. R. C., attached to the Royal West Kent Regiment of the British army, was wounded in the recent fighting in Flanders and northern France.

American Medical Officer Awarded French War Cross

Lieut. George Patton, M. C., of New York City, has been awarded the French War Cross for courage shown in caring for wounded men during a heavy bombardment of gas shells. Lieutenant Patton remained at his task without the protection of a gas mask.

Cuba to Send Medical Unit

Voting under suspension of the rules, April 10, the senate of Cuba adopted a resolution to send to France a medical unit consisting of 100 physicians and an equal number of nurses, to represent the Cuban Red Cross.

American Medical Officer Missing

Lieut. John S. Abbott, M. C., of Minneapolis, was reported missing on April 15. Lieutenant Abbott, who had answered the appeal for aid made by the British Medical Service, was attached to the Eighteenth Field Artillery of the British army, which has been engaged in the present great drive in Flanders.

Personnel of the Medical Department

For the week ending April 26, 1918, the personnel of the Medical Department of the Army included:

MEDICAL CORPS: 843, including 1 major-general, 65 colonels, 110 lieutenant-colonels, 239 majors, 1 captain and 427 lieutenants.

MEDICAL RESERVE CORPS: 18,693, including 1,221 majors, 4,487 captains and 12,985 lieutenants. On active duty: 16,359, including 1,105 majors, 4,029 captains and 11,225 lieutenants.

MEDICAL CORPS, NATIONAL GUARD: 1,204, including 16 lieutenant-colonels, 253 majors, 146 captains and 789 lieutenants.

MEDICAL CORPS, NATIONAL ARMY: 111, including 3 brigadier-generals, 11 colonels, 88 lieutenant-colonels and 8 majors.

DENTAL CORPS, 209; DENTAL RESERVE CORPS, 5,220, of whom 1,369 are on active duty; DENTAL CORPS, N. G., 258; VETERINARY CORPS, 17; VETERINARY RESERVE CORPS, 1,434, of whom 786 are on active duty; VETERINARY CORPS, N. G., 50; VETERINARY CORPS, N. A., 412; SANITARY CORPS, 1,030, and AMBULANCE SERVICE, 157, constitute the remainder of the commissioned personnel.

The DISCHARGES in all branches of the service to date are:

Causes	Number			
	M.R.C.	M.C.N.G.	D.C.N.G.	San.C.
Physical disability	607	46	7	6
Inaptitude	237	16	0	1
Other branches	485	62	7	58
Resignations	104	45	5	8
Domestic troubles	59	1	0	1
Needed by community	46	1	0	0
Deaths	61	3	0	1
Dismissals	6	2	0	0
Duty completed	1	0	0	0
No reason	14	0	0	0
Good of service	0	0	0	1
	1,620	176	19	76

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES

From Telegraphic Reports Received in the Office of the Surgeon-General for the Week Ending April 19, 1918

1. ANNUAL ADMISSION RATE PER 1,000 (DISEASE ONLY):
   - All Troops 1,745.5
   - National Guard Camps 2,053.0
   - National Army Camps 1,742.0
   - Regular Army 1,515.8
2. NONEFFECTIVE RATE PER 1,000 ON DAY OF REPORT:
   - All Troops 49.1
   - National Guard Camps 46.8
   - National Army Camps 54.2
   - Regular Army 43.6
3. ANNUAL DEATH RATE PER 1,000 (DISEASE ONLY):
   - All Troops 12.9
   - National Guard Camps 6.5
   - National Army Camps 17.3
   - Regular Army 12.4

NEW CASES OF SPECIAL DISEASES REPORTED DURING THE WEEK OF APRIL 19, 1918

Camps	Pneumonia	Dysentery	Malaria	Venereal	Measles	Meningitis	Scarlet Fever	Deaths	Annual Admission Rate per 1,000 (Disease Only)	Noneffective per 1,000
Wadsworth	2	..	..	99	1	1	...	7	589.0	22.0
Hancock	2	..	..	32	...	1	1	1	653.5	25.2
McClellan	4	..	..	5	1	..	...	0	2,783.5	43.6
Sevier	16	..	..	25	21	1	5	4	732.8	27.0
Wheeler	24	..	3	12	...	..	...	8	4,818.5	85.1
Logan	14	..	2	73	11	..	9	2	3,393.4	51.7
Cody	19	..	..	2	...	..	...	5	450.6	26.2
Doniphan	23	..	..	7	...	..	...	4	2,646.2	68.4
Bowie	22	..	2	67	...	..	...	7	1,554.3	50.5
Sheridan	5	..	..	17	3	..	1	1	2,698.5	45.4
Shelby	8	..	..	17	3	..	...	6	4,536.7	87.4
Beauregard	15	..	18	27	...	1	...	2	2,083.3	65.4
Kearny	1	..	1	1	...	..	6	2	1,178.0	42.3
Devens	37	..	..	27	3	..	...	7	881.4	42.5
Upton	13	..	..	48	19	..	7	11	953.1	43.0
Dix	11	..	..	73	14	1	8	4	1,169.2	35.9
Meade	17	..	..	69	8	..	1	6	1,262.7	45.1
Lee	11	1	2	212	5	..	1	3	1,730.4	59.7
Jackson	14	1	6	15	17	..	...	3	1,950.0	67.4
Gordon	32	..	..	44	22	1	4	9	2,554.0	51.6
Sherman	20	..	..	58	1	1	20	16	1,560.0	46.7
Taylor	37	..	..	21	48	2	...	11	4,660.5	82.4
Custer	28	..	..	37	4	..	8	6	937.7	32.0
Grant	7	..	..	15	5	..	3	20	772.8	28.3
Pike	28	..	..	90	31	2	3	9	2,307.0	71.6
Dodge	75	..	..	63	19	3	44	20	1,898.6	107.0
Funston	11	..	..	20	15	2	...	9	1,163.8	66.4
Travis	27	..	..	37	18	..	...	13	3,394.9	62.0
Lewis	23	..	1	75	5	..	13	4	1,241.0	48.5
Northeastern Dept.	...	..	..	2	4	1	1	7	1,167.3	35.3
Eastern Dept.	9	1	1	14	15	..	1	6	978.5	33.0
Southeastern Dept.	11	..	4	37	13	..	1	4	1,609.2	58.5
Central Dept.	6	..	..	37	33	3	20	3	1,221.5	40.4
Southern Dept.	6	..	1	89	21	13	...	14	2,161.4	53.2
Western Dept.	8	..	..	53	15	1	2	2	1,367.1	29.2
Aviation, S. C.	22	..	2	91	56	5	28	25	1,566.8	40.7
Camp Greene	13	..	..	19	4	1	3	8	1,097.1	31.2
Camp Fremont	5	..	1	17	19	..	...	1	2,112.5	55.0
El Paso	...	1	..	11	1	..	...	0	1,528.0	7.0
Columbus Barracks	1	..	..	16	...	..	3	1	2,306.6	66.8
Jefferson Barracks	10	..	..	35	4	..	16	1	2,977.0	123.5
Fort Logan	5	..	1	1	...	..	3	1	2,500.8	105.3
Fort McDowell	1	..	1	5	3	..	...	1	2,414.0	63.2
Fort Slocum	...	..	..	10	1	..	...	2	1,319.7	39.1
Fort Thomas	2	..	..	6	4	..	...	1	1,730.7	63.5
D. B. Alcatraz	...	..	..	....	...	..	...	0	1,999.9	28.8
D. F. Fort Leavenworth	...	..	..	2	...	..	...	2	1,130.4	33.1
A. A. Humphreys	...	..	..	...	2	..	...	0	859.5	3.4
J. E. Johnston	3	..	1	43	10	..	...	2	1,452.9	39.4
Camp Merritt	39	..	..	121	6	..	6	9	1,244.0	51.1
Camp Stuart	34	..	..	90	20	1	5	13	1,294.7	64.1
West Point, N. Y.	...	..	..	....	...	..	...	0	742.4	9.9
Edgewood-Aberdeen	...	..	..	1	3	..	...	0	825.8	32.6
Provisional Depot for Corps and Army Troops	15	..	..	6	7	1	...	6	1,776.2	41.4
Camp Holabird	...	..	..	1	...	..	1	0	430.3	27.6
Camp Raritan	...	..	..	1	1	..	...	0	558.0	25.8
Natl. Guard Depts.	5	..	..	3	11	..	1	5		
Natl. Army Depts.	15	..	..	136	84	..	31	14		
Camp Colt	1	..	..	5	...	..	...	1	3,447.0	50.5
Total (all troops)	800	4	47	2,057	605	42	256	338	1,745.5	49.1

ANNUAL RATE PER 1,000 FOR SPECIAL DISEASES

	All Troops in U. S., Week Ending April 19, 1918	Regulars in U. S., Week Ending April 19, 1918	National Guard, All Camps, Week Ending April 19, 1918	National Army, All Camps, Week Ending April 19, 1918	Expeditionary Forces, Week Ending April 11, 1918
Pneumonia	33.8	24.5	26.1	49.5	27.8
Dysentery	0.1	0.2	0.0	0.2	0.6
Malaria	1.9	1.5	4.1	1.0	0.4
Venereal	86.9	90.4	49.5	104.2	47.9
Paratyphoid	0.0	0.0	0.0	0.0	0.0
Typhoid	0.0	0.0	0.0	0.0	0.3
Measles	25.7	30.4	6.7	26.7	4.4
Meningitis	1.8	3.2	0.6	1.4	2.4
Scarlet fever	10.8	11.3	3.7	12.9	15.9

EXPERIENCES OF A MEDICAL OFFICER WITH THE BRITISH ARMY DURING THE RECENT ACTIVITIES IN FLANDERS

A most interesting letter has been received by Dr. J. W. Pettit of Ottawa, Ill., from his son, Lieut. Roswell T. Pettit, M. R. C., U. S. Army, attached to the British Army during its withdrawal from San Quentin. Lieutenant Pettit describes his experiences during this movement from the time of its commencement until he was relieved from duty, a period of nine days. His narrative is most interesting because he speaks of happenings which had only just occurred and which are not apt to be included in any official reports. It is a narrative of personal experiences. He speaks only of what he saw and did, not of what he heard. He had not seen a newspaper for eight days, nor had he received any mail, therefore his knowledge of what was going on elsewhere came to him in the nature of rumors. For instance, he says:

All I know is that on this part of the front the Germans attacked us in overwhelming numbers, in places ten divisions to our one; that they suffered terrible losses, but finally broke through our lines of defense, one after another, and fighting for the most part, a rear guard action, we have retired about fifteen miles in a straight line.

The battle was expected for a week; everybody was ready to move on thirty minutes' notice. Medical officers had made tours of reconnaisance, and definite methods of evacuation of the wounded had been worked out. Finally the storm broke, and Dr. Pettit describes the commencement of activities as follows:

The boche opened up on us at 5 a. m., March 21, with the heaviest barrage I have ever heard. "Stand to," was sounded, we turned out, dressed, and had all our equipment packed in thirty minutes. Then we sat down and waited for orders to move. The barrage kept up continuously, sometimes heavier and then of less intensity, sometimes it seemed to be the north of us and then suddenly it switched to the south.

Our balloons were up as soon as it was light and the aeroplanes were buzzing over our heads. The ground mist gradually cleared and the Germans put a hail of shrapnel on our camp and we all took cover, but three men were hit.

The British troops then retired, amid the most terrific shell fire. Tanks went into action. The troops were still about a mile from the front line. At this point Dr. Pettit opened up an aid post under the crest of the hill to take care of what wounded came in while the troops were getting into position. He says:

Shrapnel was bursting in the air, shells were whizzing overhead, and our guns behind me were belching forth the fire. The noise was deafening.

That the doctor is possessed of a sense of humor as well as keen powers of observation is shown by the following extract from his letter:

A railroad ran through the valley and an engine pulling a couple of flat cars was going by. A couple of soldiers were sitting on the rear truck swinging their feet. A shell burst on the track and only missed the last car about fifteen yards. Neither man was hit and the train went blithely on.

By this time it was getting along toward evening, the sun was sinking in the west, and finally went down a great ball of fire. At the time, I remember, I noticed its color. It was blood red and had a sinister look. Was it my imagination, or might it have been a premonition? At any rate, I shall never forget the color of the sun as it set that night at the end of the first day of probably one of the greatest battles in history. It certainly didn't look good to me.

Some of the hardships which the army surgeon is compelled to undergo are well outlined by Dr. Pettit:

I opened an aid post in an old dugout and settled down to sleep until morning. You may think it funny that one could sleep under such conditions, but I had been up since 5:30, had tramped about six or seven miles, had had a rather trying day and was dog tired.

So I settled down on the rough plank floor and was soon asleep. I must have been asleep a couple of hours when a runner came from headquarters and told us we were to move off immediately. I looked at my watch and it was 1:30 a. m. on the second day.

And then there came some more marching, with orders to establish an aid post near battalion headquarters. It was at this time that Dr. Pettit walked in the wrong direction, toward and not away from the enemy. Being set right by the company commander, he about faced and went in the other direction. Then it came to pass that the doctor ran into a piece of good luck:

On the way back I found a gallon can full of water, got into a corrugated iron shelter and had a wash and a shave. It certainly felt good. I do not believe I had washed for thirty-six hours.

Then things began to liven up:

Headquarters had been established in a sunken road with banks about 15 feet high on either side (later this cut was half filled with dead). My aid post was in a dugout nearby and gradually things got hotter and hotter.

Our men had dug themselves in and were popping away with their rifles. The field batteries behind us were putting up a barrage, aeroplanes were circling overhead, both ours and the Germans'. The Germans put up a counter barrage; the machine guns were going like mad. I was standing with the colonel on a little rise of ground above the sunken road when the Germans broke through about a mile to the north of us. They could be plainly seen pouring over the ridge in close formation.

TANKS GET INTO ACTION

Then the tank came up, and you should have seen them run! Just like rabbits! The tanks retired; the boches reformed and came at it again. They tell me that at certain places our men withstood fifteen successive attacks and that the Germans went down in thousands. One Welshman told me that his gun accounted for seventy-five in three minutes during one wave.

Machine gun bullets were nipping around me, the shell fire was getting hotter, and even though it was a wonderful sight to watch I decided "discretion was the better part of valor," or something like that and got down in my dugout.

I was sitting there smoking a cigaret when my orderly came down and said I was being relieved and was to go back and work with the ambulance. Fifteen hours later the man that relieved me was captured.

From this point on, Dr. Pettit's description is so intensely interesting that nothing short of reading every word can convey an adequate picture of what his experiences were at this time:

I went back to the advanced dressing station through the hottest shell fire I ever experienced. More than once I went down on my face when a shell burst and the pieces went whizzing over my head. I spent the night in a mined village where the advanced dressing station was located, and all night they shelled it to blazes. It was remarkable how few casualties we had.

About 11 o'clock the morning of the third day a shell blew in the side of our post, but luckily no one was hurt. We stuck to it until about 4 in the afternoon, when we saw our men retiring over a ridge in front of us, keeping up a continuous machine gun and rifle fire, and we beat it back to another village and opened another post.

About 10 o'clock on the morning of the fourth day Lord Thyme, my colonel when I was with the battalion, stumbled into the shack where I was sitting. He looked like a ghost. He had lost his hat, his face was covered with a four days' beard, the sweat had traced tracks in the dust from his forehead to his chin. His sleeve was torn and bloody and he had a gash in his arm where he had been struck by a piece of flying shell case.

"My God, doc, are you here?" he said. "You got out just in time. The battalion is all gone. The sunken road is filled with dead—mostly Huns, damn 'em. The line broke on the right; we were surrounded, and at the last we were fighting back and back. Only thirty of us got away."

So we knew the boche had broken through to our right and our left, and it was a question of how long it would be before we, too, were surrounded, but we wanted to stick it out as long as we could.

TOLD TO RETIRE

But not more than an hour later a medical officer rushed in from one of the battalions and between gasps for breath told us the Germans were on the edge of the village, had shot him through the sleeve with a machine gun bullet (luckily that was all), and for us to beat it.

Let me tell you we did. I threw my knapsack and made the first hundred yards in nothing flat and then settled down to a walk because I was so out of breath I couldn't run any more.

The incessant scream and crash and bang of the shells kept up and the rat-tat-tat of the machine guns never ceased. The village immediately behind us was a seething mass of brick dust, smoke, flame, and bursting shells. We were told on our way back that a stand was to be made behind this village, so we circled around it and took up a position about a half mile behind it at a crossroads.

Unfortunately for us, a six inch battery came into action about fifty yards from us and, aside from the harassing effect of the terrific noise, batteries are always unpleasant neighbors, as they invite shell fire. We stopped here until 10 o'clock at night, when we were ordered to retire.

There was no way of getting out the wounded that we had collected, so the stretcher bearers carried them on their stretchers for six or seven miles. In fact, we all helped, and when we arrived at our destination at 4 o'clock in the morning of the fifth day we were all in.

I could hardly move, but after two big bowls of hot tea and some hard tack I turned in on the floor and slept like a log for four hours, when we moved to another place and opened a dressing station.

And so it went for three days more, open a dressing station, retire (sometimes on the run), long marches, very little to eat except what we foraged from abandoned camps and dumps, dog tired, sleeping when and where we could, and finally the division was relieved. We now saw our first civilians, and last night I slept in a bed. It wasn't much of a bed, and the mattress was full of humps, but to get my boots off my sore and aching feet, to stretch out, and know I wouldn't be routed out in fifteen minutes—well, you couldn't have bought that bed from me for $100.

Then the good doctor is reminded of Robert W. Service's description of the retreat from Mons:

Tramp, tramp, the grim road, the road from Mons to Wipers;
I've 'ammered out this ditty with me bruised and bleeding feet;
Tramp, tramp, the dim road—
We didn't 'ave no pipers—
All bellies that were 'oller was the drums we 'ad to beat.

On the ninth day Dr. Pettit was relieved from duty with the British army and assigned to the American Expeditionary Force. All of his kit had to be burned to prevent it from falling into the hands of the enemy. While the doctor was "kitless" he certainly cannot be accused of being "witless."

ORDERS TO OFFICERS OF THE MEDICAL CORPS AND OF THE MEDICAL CORPS OF THE NATIONAL ARMY

To Camp Crane, Allentown, Pa., base hospital, from Fort Oglethorpe, Major WILLIAM H. ALLEN.

To Camp Dix, Wrightstown, N. J., and *Camp Upton*, Long Island, N. Y., for duty, and on completion *to his proper station*, from Camp Meade, Lieut.-Col. PHILIP W. HUNTINGTON.

To Camp Dodge, Des Moines, Ia., *Camp Grant*, Rockford, Ill., *Camp Custer*, Battle Creek, Mich., *Camp Sherman*, Chillicothe, Ohio, and *Cleveland, Ohio*, for duty, and on completion *to his proper station*, Lieut.-Col. WINFORD N. SMITH.

To Camp Lee, Petersburg, Va., for temporary duty, and on completion *to his proper station*, Col. WILLIAM H. MONCRIEF. For temporary duty, from Camp Wheeler, Lieut.-Col. CONDON C. McCORNACK.

To Camp Lewis, American Lake, Wash., for duty, from Seattle, Lieut. CARLTON L. VANDERBOGET.

To Camp Perry, Ohio, for duty, from New Haven, Major ARDEN FREER.

To Camp Pike, Little Rock, Ark., for duty, from Camp MacArthur, Lieut. HALL G. VAN VLACK.

To Camp Zachary Taylor, Louisville, Ky., and *Camp Sherman*, Chillicothe, Ohio, for duty, and on completion *to his proper station*, from Camp Shelby, Lieut.-Col. ROBERT M. BLANCHARD.

To Cleveland, Ohio, for duty, and on completion *to his proper station*, Lieut.-Col. WINFORD N. SMITH.

To Fort Riley for inspection, and on completion *to their proper stations*, Major-General WILLIAM C. GORGAS, Col. EDWARD L. MUNSON.

To Muncie, Ind., Cincinnati, Ohio, and *Indianapolis, Ind.*, for inspection, and on completion *to his proper station*, from Louisville, Major JOHN P. FLETCHER.

To Newport News, Va., for duty, and on completion *to his proper station*, Lieut.-Col. EDGAR KING. For duty, from San Francisco, Major ERNEST C. McCULLOCH. *To Newport News, Va., Locust Point, Md.*, and *New York City*, for inspection, and on completion *to his proper station*, from Washington, D. C., Major FRANCIS X. STRONG.

To New York City for duty, and on completion *to his proper station*, from Camp Crane, Col. ELBERT E. PERSONS. Neurological Institute, for instruction, and on completion *to Hoboken, N. J.*, base hospital, from Fort Des Moines, Major ARTHUR C. STOKES.

To Pinehurst, N. C., and *Birmingham, Ala.*, for duty, and on completion *to his proper station*, Col. ROBERT E. NOBLE.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School* for duty, from Camp Beauregard, Major OLIVER L. POTHIER.

To San Francisco, Calif., as commanding officer of Letterman General Hospital, from San Francisco, Lieut.-Col. WALTER H. WINTERBERG. For duty, from Philippine Department, Major WALTER P. DAVENPORT.

To Springfield Arsenal, Springfield, Mass., *U. S. Army General Hospital*, New Haven, Conn., *Watervliet Arsenal, U. S. Disciplinary Barracks*, Fort Jay, and *U. S. Army General Hospital*, Williamsbridge, N. Y., *Picatinny Arsenal, Camp Raritan, Camp Alfred Vail*, Little Silver, and *U. S. Army General Hospital*, Lakewood, N. J., for sanitary inspection, and on completion *to his proper station*, Lieut.-Col. FRANK W. WEED.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. JOHN L. GOOD.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Camp Colt, Gettysburg, Pa., for duty, from Fort Oglethorpe, Lieut. ALBERT D. McFADDEN, Ariton.

To Camp Gordon, Atlanta, Ga., *Camp Greene*, Charlotte, N. C., and *Camp Lee*, Petersburg, Va., for conference, and on completion *to his proper station*, Major JAMES N. BAKER, Montgomery.

To Camp Travis, Fort Sam Houston, Tex., for duty, from duty as a private at Camp Wheeler, Lieut. ALVIN E. BELDEN, Birmingham.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Devens*, Ayer, Mass., base hospital, from Fort Oglethorpe, Lieut. OLLIE P. BOARD, Birmingham.

To Panama Canal Department for duty, from Canal Zone, Capt. HENRY GOLDTHWAITE, Perdodo Beach.

Honorably discharged, Lieut. THEODORE M. BLAKE, Fruitdale. On account of physical disability existing prior to entrance into the service, Lieuts. JACOB D. STAPLES, Goodwater; CHARLES W. BRASFIELD, Linden.

Arizona

To Camp Cody, Deming, N. M., base hospital, from Camp Cody, Lieut. ROBERT FERGUSON, Bisbee.

To Camp Travis, Fort Sam Houston, Tex., as member of the board examining the command for tuberculosis, from Fort Riley, Lieut. SPENCER D. WHITING, Salt River.

To Fairfield, Ohio, Wilbur Wright Field, Signal Corps Aviation School, for duty, and on completion *to his proper station*, from Camp Sherman, Capt. CHARLES T. STURGEON, Globe.

Arkansas

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. RAYMOND C. WOLFE, Little Rock.

To Camp Travis, San Antonio, Tex., base hospital, from Camp Kearny, Lieut. JAMES W. RAMSEY, Jonesboro.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Camp Wheeler, Lieut. WALLACE D. ROSE, Little Rock.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, from Camp Gordon, Lieut. ARTHUR G. KELLEY, De Witt.

California

To Ann Arbor, Mich., University of Michigan, for temporary duty, from New York City, Capt. BYRON P. STOOKEY, Los Angeles.

To Army Medical School for instructions, Lieuts. CARLTON S. ALLEN, Los Angeles; JAMES G. ANDERSON, Petaluma; RAY W. KARRAS, Sawtelle.

To Camp Fremont, Palo Alto, Calif., base hospital, Capt. WILLIAM W. CROSS, Fresno.

To Camp Grant, Rockford, Ill., for duty, from Camp Bowie, Capt. GEORGE A. FIELDING, Sawtelle.

To Camp Kearny, Linda Vista, Calif., base hospital, Major JEAN J. A. VAN KAATHOVEN, Los Angeles; Capts. GEORGE TUPPER, Long Beach; ELIOT ALDEN, EDWIN H. WILEY, Jr., Los Angeles; THOMAS R. McHUGH, San Bernardino; Lieuts. KARL L. DIERTERLE, SIMOND A. JESBERG; ARCH M. PAULSON; BRET A. SWARTZ, Los Angeles; from Camp Cody, Major WALTER V. BREN, Los Angeles; from Camp Fremont, Lieut. RUSSELL W. PRINCE, Los Angeles; from Camp Lewis, Capt. FREDERICK A. COLLER, Los Angeles; from San Francisco, Lieut. ROBERT B. HILL, Los Angeles. For duty, Capt. GEORGE B. WORTHINGTON, San Diego; from duty as contract surgeon, at Camp Kearny, Lieut. LEON SHULMAN, Los Angeles. *To Camp Kearny, Camp Fremont*, Palo Alto, Calif., and *Letterman General Hospital*, San Francisco, Calif., for inspection, and on completion *to Washington, D. C.*, for conference, and on completion *to Fort McPherson*, for temporary duty, from Los Angeles, Capt. JOHN C. WILSON, Los Angeles.

To Camp Lewis, American Lake, Wash., base hospital, from Camp Lewis, Capt. MAYNARD C. HARDING, San Diego. For duty, Lieut. GLENN E. MYERS, Agnew.

To Camp Sevier, Greenville, S. C., base hospital, from Fort McHenry, Capt. HOWARD C. NAFFZIGER, San Francisco.

To Fort Leavenworth, Kan., for duty, Lieut. HERSEL E. BUTKA, Los Angeles.

To Fort Oglethorpe, base hospital, from San Francisco, Capt. LAWRENCE H. HOFFMAN, San Francisco; from Camp Fremont, Lieuts. EARL B. FITZPATRICK, Martinez; HERBERT J. COHN, San Francisco; from Fort Riley, Lieut. EARL L. LUPTON, Los Angeles.

To Fort Riley for instruction, Capts. ARTHUR McINTOSH, Berkeley; BERTRAM C. DAVIES, ROBERT C. HOWE, Los Angeles; JOHN H. MEYER, San Bernardino; Lieuts. ALVIN H. WILMAR, Paso Robles; WILLIAM J. CAESAR, Richmond.

To Lake Charles, La., Signal Corps Aviation School, for duty, from San Antonio, Major LORENZO F. LUCKIE, Los Angeles.

To Los Angeles, Calif., for duty, Lieut. PAUL K. SELLEW, Los Angeles.

To Mineola, Long Island, N. Y., Hazelhurst Field, Signal Corps Aviation Section, for duty, from Camp Lewis, Lieut. JAIME DE ANGULO, Carmel.

To New York City, Orthopedic Hospital, for instruction, from Army Medical School, Capt. JOSEPH W. COOK, Redlands.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. FREDERICK E. HERZER, Loma Linda.

Honorably discharged, Lieut. CHARLES A. MACKEY, Oakland. On account of physical disability existing prior to entrance into the service, Lieut. GEORGE D. TROUTMAN, Los Angeles.

Colorado

To Army Medical School, for instruction, Lieuts. OMER R. GILLETT, Colorado Springs; JOSEPH W. PECONY, Denver.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. JOHN C. HERRICK, Denver.

To Camp Cody, Deming, N. M., base hospital, Lieut. RANULPH HUDSTON, Denver.

To Camp Lewis, American Lake, Wash., base hospital, from Denver, Capt. ROBERT LEVY, Denver.

To Camp Travis, Fort Sam Houston, Tex., base hospital, from San Antonio, Lieut. JOHN W. THOMPSON, Pueblo.

To Fort Riley for instruction, Lieuts. GEORGE B. LEWIS, WILLIAM ROBERTS, Denver; VARDRY A. HUTTON, Florence; EARL W. KEMBLE, Golden.

To Fort Thomas, Ky., for duty, from Fort Oglethorpe, Lieut. ORION A. GRANTHAM, Johnstown.

Connecticut

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. EDWARD B. ALLEN, South Manchester.

To Camp Zachary Taylor, Louisville, Ky., as member of the tuberculosis examining board, from Fort Oglethorpe, Lieut. LEONARD J. LOEWE, Higganum.

To Edgewood, Md., base hospital, Lieut. FRANK H. McLAURY, Westport.

To Fort Oglethorpe for instruction, Capt. HENRY G. ANDERSON, Waterbury; Lieuts. JOHN G. ADAM, Canaan; WILLIAM W. CRAMM, Mansfield Center; JAMES A. HARTEN, New Haven.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Shelby*, Hattiesburg, Miss., base hospital, Capt. JOHN H. EVANS, Norwich. *Neurological Institute*, from Fort Oglethorpe, Lieut. RUSSELL B. STREET, Suffield.

To Pittsburgh, Pa., for instruction, and on completion *to Camp Jackson*, Columbia, S. C., base hospital, from Fort Oglethorpe, Lieut. OWEN J. GROAK, Bridgeport. On completion *to Camp Pike*, Little Rock, Ark., base hospital, Lieut. MAURICE J. STRAUSS, New Haven.

To Washington, D. C., for duty, Capt. WILLIAM C. DEMING, Georgetown. Gas defense service, for duty, Lieut. MICHAEL F. CLAFFEY, Naugatuck.

Delaware

To Fort Oglethorpe for instruction, Lieuts. HORACE J. WILLIAMS, Georgetown; ABRAM J. GROSS, Wilmington.

District of Columbia

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Capt. HARRY L. SCHURMEIER, Washington.

To Fort Riley for duty, Capt. WILLIAM B. MACDERMOTT, Washington.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Hancock, Lieut. OLIVER C. COX, Washington.

To New York City, Bellevue Hospital, for instruction, and on completion *to his proper station*, from Williamsbridge, Lieut. JAMES A. CAHILL, Jr.

Letter directing Lieut. EDGAR SNOWDEN, Washington, to Hoboken, N. J., for duty, revoked.

Florida

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. LELAND F. CARLTON, Tampa.

To Camp Grant, Rockford, Ill., as member of the board examining the command for tuberculosis, from Fort Oglethorpe, Capt. JOHN MACDIARMID, DeLand.

To Fort Oglethorpe for instruction, Capt. BEDFORD E. VAUGHAN, Palmetto.

To Panama Canal Department for duty, from Canal Zone, Capt. MAURICE B. HECK, St. Augustine.

Honorably discharged, Lieut. JOEL W. HOOD, Ocala. On account of physical disability existing prior to entrance into the service, Lieuts. OVODIA F. GREEN, Mayo; TOBERT H. TRAMMELL, Muskogee.

Georgia

To Army Medical School for instructions, Lieuts. WILLIAM P. PHILIPS, Atlanta; CHESTER A. WITMER, Waycross.

To Camp Gordon, Atlanta, Ga., base hospital, Major JAMES R. PAULLIN, Lieuts. FORREST M. BARFIELD, Atlanta; JESSE H. CAMPBELL, Jefferson. For duty, from service as an enlisted man at Camp Wheeler, Lieut. JAMES M. TRIBBLE, Senoia.

To Camp Meade, Annapolis Junction, Md., as member of the board examining the command for tuberculosis, from Fort Oglethorpe, Lieut. RALPH E. HAMILTON, Douglasville.

To Camp Meigs, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. REUBEN T. CAMP, Fairburn.

To Camp Taliaferro, Fort Worth, Texas, Signal Corps Aviation School, from Mineola, Lieut. JAMES L. BLAIR, Atlanta.

To Fort McPherson, Ga., for duty, from New Orleans, Major WILLIAM A. CHAPMAN, Cedartown.

To Fort Oglethorpe for instruction, Capt. JOHN A. SELDEN, Macon.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Gordon, Capt. FRANK BIRD, Valdosta.

To Newport News, Va., for duty, Lieut. LUTHER T. YOUNG, Atlanta.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. JEFFERSON W. PAFFORD, Nicholls.

Honorably discharged on account of physical disability incurred in line of duty, Capt. JESSE M. ANDERSON, Columbus.

Idaho

To Fort Riley for instruction, Lieut. FRANK W. MITCHELL, Blackfoot.

Illinois

To Army Medical School for instructions, Lieuts. WILLIAM D. NAPIANTEK, RICHARD TORPIN, Chicago; ARTHUR E. SHELL, Clinton; PORTER W. HOPKINS, East Chicago; HOWARD F. WHARFF, Edwardsville; ROSCOE WHITMAN, Morris; LAWRENCE M. MARLEY, Nokomis.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. NELSON H. LOWRY, Jr., Chicago.

To Camp Beauregard, Alexandria, La., base hospital, from Fort Greble, Major THOMAS A. WOODRUFF, Chicago; from Army Medical School, Lieut. CHARLES J. MANLOVE, Chicago.

To Camp Colt, Gettysburg, Pa., for duty, from Fort Oglethorpe, Lieut. ROY M. MONTFORT, Danville.

To Camp Custer, Battle Creek, Mich., base hospital, Capts. MAX L. MENDEL, EDWIN W. RYERSON, Chicago; WILLIAM B. FISK, Oak Park; Lieuts. JOHN D. DAVENPORT, EARLE B. FOWLER, HAROLD E. JONES, SELIM W. McARTHUR, Chicago; ERNEST N. GREENMAN, EDWIN S. HAMILTON, Kankakee; from Camp Grant, Major JOHN J. McCLELLAN, Lieut. THEODORE L. HANSON, Chicago; from Camp Greene, Lieut. RALPH B. BETTMAN, Chicago; from Camp Lee, Lieut. JOHN FAVILL, Chicago; from Camp McClellan, Lieut. ADELBERT M. MOODY, Chicago; from Fort Riley, Capt. THOMAS L. DAGG, Chicago; from New York City, Lieut. CHARLES L. MOIR, Chicago. As orthopedic surgeon, from Chicago, Lieut. ALFORD E. BUDDE, North Chicago.

To Camp Devens, Ayer, Mass., base hospital, from Fort Oglethorpe, Lieut. ROBERT W. KISPERT, Chicago.

To Camp Dodge, Des Moines, Iowa, base hospital, Major NELSON M. PERCY, Capts. HENRY H. KLEINPELL, NELSON C. MORROW, Lieuts. JOHN P. ASHWORTH, CLARENCE J. HICKS, Jr., BENNETT R. PARKER, ALBERT R. TORMEY, ANDERS J. WEIGON, Chicago; GEORGE H. SCHROEDER, Oak Park; ALEXANDER F. STEWART, Oneida; from Camp Bowie, Lieut. ERIC K. PARTHOLOMEW, Chicago; from Camp Custer, Lieut. HARRY I. DWYER, Chicago; from Camp Grant, Lieuts. THOMAS A. CARTER, Chicago; CARL F. LEWIS, Jeffersville; from Camp Pike, Capt. GEORGE F. DICK, Lieuts. MICHAEL M. CODY, ROBERT H. HENDERSON, Chicago; from Fort Oglethorpe, Lieuts. LEO M. CZAJA, SAMUEL C. FLEMING, JOHN J. LUCZAK, HERMAN C. SCHUMM, Chicago; from Fort Snelling, Lieut. THOMAS D. CANTRELL, Bloomington; from Fort Riley, Lieut. ROYAL W. DUNHAM, Chicago.

To Camp Gordon, Atlanta, Ga., base hospital, from Boston, Lieut. CLARENCE A. JACOBSON, Chicago.

To Camp Greene, Charlotte, N. C., base hospital, from Walter Reed General Hospital, Capt. BERNARD M. CONLEY, Wilmette.

To Camp Hancock, Augusta, Ga., base hospital, from Fort Oglethorpe, Major MAURICE L. GOODKIND, Chicago.

To Camp Lee, Petersburg, Va., for temporary duty, and on completion *to his proper station*, Major ALLEN B. KANAVEL, Chicago.

To Camp Meade, Annapolis Junction, Md., base hospital, from Army Medical School, Lieut. EVERETT E. HOWARD, Rossville.

To Camp Perry, Ohio, for temporary duty, from Camp Pike, Lieut. MILTON A. WIESE, Chicago.

To Camp Pike, Little Rock, Ark., as member of the board examining the command for tuberculosis, from Fort Oglethorpe, Lieut. ARTHUR C. CONRAD, Chicago.

To Camp Travis, Fort Sam Houston, Texas, base hospital, Capt. LOUIS A. GREENSFELDER, Chicago.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Boston, Lieut. BENJAMIN J. SCHWARTZ, Waukegan.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to Camp Zachary Taylor*, Louisville, Ky., base hospital, Lieut. RALPH KING, Olney.

To Fort Benjamin Harrison, Ind., for duty, Lieuts. MARCUS S. FLETCHER, Georgetown; FRANK H. DEANE, Humboldt.

To Fort Bliss, Tex., to examine the troops for mental and nervous diseases, and on completion to examine all the troops in the El Paso district, Capt. ROMNEY M. RITCHEY, Elgin.

To Fort Leavenworth, Kan., Signal Corps Training Camp, Capt. HALL WHITTAKER, Mount City.

To Fort McPherson, Ga., for duty, from Camp Gordon, Lieut. WILSON K. DYER, Kankakee.

To Fort Oglethorpe for instruction, Capts. CHARLES W. CARTER, Clinton; HENRY M. VAN HOOK, Mount Pulaski; Lieuts. JAMES A. LOMAS, ANTHONY T. WEBER, JOHN P. WOITALEWICZ, Chicago; WALTER F. DUCKETT, Forrest; JAMES J. ROSE, Marshall; CLYDE D. GULICK, Urbana; from Chicago, Lieut. DANIEL H. LEVINTHAL, Chicago.

To Fort Riley for duty, Capt. EDMOND A. HOLBERG, Chicago. For instruction, Capts. CHARLES B. YOUNGER, Chicago; JAMES F. PERCY, Galesburg; Lieuts. HARRY G. KITSCHLE, Canton; SYLVIO A. SCIARRETTA, ADOLPH D. TOLLEFSEN, Chicago; JOSEPH BRAYSHAW, Homer; ANTHONY B. ZWASKA, Rockton.

To Fort Screven, Ga., for duty, from Fort Oglethorpe, Lieut. CLARENCE McK. CHEADLE, Rockford.

To Hoboken, N. J., for duty, from the Surgeon-General's Office, Major PAUL B. MAGNUSON, Chicago; from Fort Oglethorpe, Lieut. HARRY E. VANDER BOGART, Chicago.

To Mineola, L. I., N. Y., for duty, from Fort Riley, Lieut. PAUL H. ROWE, Chicago.

To Mount Clemens, Mich., Selfridge Field, Signal Corps Aviation School, for duty, from Mineola, Lieut. ROBERT F. KNOLL, Chicago.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Beauregard, Lieut. IRA E. NEER, Springfield.

To New York City for duty, and on completion *to his proper station*, Major HARRY E. MOCK, Chicago. For instruction, from Fort Riley, Lieut. RAYMOND E. DAVIES, Chicago. Bellevue Hospital, for instruction, and on completion *to Camp Dix*, Wrightstown, N. J., base hospital, Lieut. ROLLE K. PACKARD, Chicago. On completion *to Camp Wadsworth*, Spartanburg, S. C., base hospital, Lieut. CHARLES F. HARRIS, Chicago. Orthopedic Hospital, for instruction, from Chicago, Capt. ALBERT B. McQUILLAN, Chicago; Lieut. ELMER M. THOMAS, Aurora.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Camp Wadsworth, Lieut. JOHN V. DILLMAN, Louisville.

To Pittsburgh, Pa., for instruction, and on completion *to Camp Greene*, Charlotte, N. C., base hospital, from Fort Oglethorpe, Lieut. LEROY H. HARNER, Chicago.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. HARVEY T. LITTLE, Chicago.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, from Fort McPherson, Capt. WILLIAM A. N. DORLAND, Chicago.

Honorably discharged, Lieuts. RESIN P. JOHNSON, Chicago; NORTON W. BOWMAN, Flora. On account of physical disability existing prior to entrance into the service, Lieut. E. N. RICHARDSON, Mattoon. On account of physical disability incurred in line of duty, Lieut. ALBERT R. CARTER, Murphysboro.

The following orders have been revoked: *To Camp Custer*, Battle Creek, Mich., Lieut. JOHN D. DAVENPORT, Chicago. *To Camp Custer*, base hospital, Capt. EDWIN W. RYERSON, Chicago.

Indiana

To Army Medical School for instructions, Lieuts. FORREST J. YOUNG, Milford; ARTHUR J. WHALLON, Richmond.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. MERRILL S. DAVIS, Marion.

To Camp Grant, Rockford, Ill., for duty, from Camp Bowie, Lieut. MICHAEL ROBINSON, Muncie; from Garden City, Lieut. PAUL A. GARBER, Sidney.

To Camp Meade, Annapolis Junction, Md., as member of the board examining the command for tuberculosis, from Fort Oglethorpe, Lieut. CLYDE E. WATSON, Nampa.

To Camp Pike, Little Rock, Ark., as member of the board examining the command for tuberculosis, from Fort Riley, Lieut. DORSEY D. METCALF, Fort Wayne.

To Camp Sheridan, Montgomery, Ala., as member of the board examining the command for tuberculosis, from Fort Oglethorpe, Capt. AMZI W. HON, Indianapolis.

To Camp Travis, Fort Sam Houston, Tex., for duty, from Camp MacArthur, Capt. BEN WEBSTER, Kingsbury.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to Camp Logan*, Houston, Tex., base hospital, Capt. JOSEPH H. WEINSTEIN, Terre Haute. On completion *to Camp Zachary Taylor*, Louisville, Ky., base hospital, Lieut. CHESTER N. FRAZIER, Indianapolis.

To Fort Benjamin Harrison, Ind., for duty, Lieuts. MILLARD F. BRACKNEY, Mooresville; CHARLES N. COMBS, Terre Haute; LESLIE A. KUHN, Wyatt; CHARLES C. McFARLIN, Zenas; from New York City, Capt. FREDERICK M. WHISLER, Wabash.

To Fort Des Moines, Ia., base hospital, Lieut. CHARLES N. COMBS, Terre Haute.

To Fort Oglethorpe for instruction, Lieuts. BARUCH M. EDLAVITCH, Fort Wayne; GEORGE B. MORRIS, Petroleum; from Chicago, Lieut. THOMAS P. GOODWYN, South Bend.

To Fort Riley for instruction, from Fort Des Moines, Lieut. ARTHUR L. LEEDS, Michigan City.

To Gettysburg, Pa., for duty, from Camp Sevier, Lieut. LLOYD H. SIMMONS, Millersburg.

To Hoboken, N. J., for duty, Capt. CHARLES R. DANCER, Fort Wayne.

To New York City for instruction, from Camp Dix, Lieut. HARRY E. WOODBURY, Plymouth.

To Philadelphia, Pa., University Hospital, for instruction and on completion *to his proper station*, from Fort McPherson, Capt. MALACHI R. COMBS, Terre Haute.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School* for duty, from Atlanta, Capt. MERTON A. FARLOW, Milroy.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. OTTO H. SWANTUSCH, Metz.

Resignation of Lieut. DAVID D. OAK, LaCrosse, accepted.

Iowa

To Army Medical School for instructions, Lieuts. CECIL C. BOWIE, Dedham; FRANK A. WILL, Des Moines.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. THEODORE A. WILLIS, Iowa City.

To Camp Colt, Gettysburg, Pa., for duty, from Fort Logan H. Roots, Lieut. ORSON A. KELLOGG, Dows.

To Fort Benjamin Harrison, Ind., for duty, Lieut. FRANK A. HUBBARD, Columbus Junction.

To Fort Riley as instructor, from Boston, Capt. EDWIN E. HOBBY, Iowa City. For instruction, Lieuts. LEWIS A. HOPKINS Grinnell; CLARENCE McC. WRAY, Iowa Falls; FRED C. SMITH, Keokuk; from Fort Des Moines, Capt. THOMAS E. McCAUGHAN, Ireton.

To Fox Hills, N. Y., for duty, from Camp Grant, Capt. ELMER J. LAMBERT, Ottumwa.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Travis, Lieut. HENRY E. KLEINBERG, Redfield.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Camp Wadsworth, Lieut. MEREDITH B. MURRAY, Macedonia.

Honorably discharged, Capt. RAYMOND N. JACKSON, Fort Des Moines.

The following orders have been revoked: *To Army Medical School* for instruction, Lieut. CECIL C. BOWIE, Dedham. *To Camp Dix*, Wrightstown, N. J., for duty, from Camp Upton, Lieut. WILLIAM HARRIS, Moravia.

Kansas

To Army Medical School for instructions, Lieut. HOWARD E. MARCHBANKS, Pittsburg.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. WILLIAM G. BOUSE, Centralia.

To Camp Gordon, Atlanta, Ga., as assistant to camp surgeon, from Fort Riley, Lieut. EMORY A. DRAKE, Natoma.

To Fort Riley for instruction, Lieuts. WALTER J. NICHOLS, Pittsburg; JOHN L. WORK, Topeka.

To Fort Sheridan, Ill., hospital train, Lieut. SOLON C. WINERY, Clearwater.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. CHARLES W. ROBINSON, Atchison.

Resignation of Lieut. MALCOMB C. NEWMAN, Toronto, accepted.

Kentucky

To Army Medical School for instruction, Lieuts. JOSEPH A. WALL, Hopkinsville; WILLIAM P. K. HOWARD, Wallins Creek.

To Camp A. A. Humphreys, Accotink, Va., for duty, Lieut. ROY F. ROBINSON, Madisonville.

To Camp Logan, Houston, Tex., for duty, from Camp Cody, Lieut. GEORGE A. CRAFTON, Fulton.

To Camp Sevier, Greenville, S. C., base hospital, from Camp Sevier, Lieut. CHARLES L. VENABLE, Franklin.

To Camp Zachary Taylor, Louisville, Ky.; base hospital, from Fort Thomas, Capt. JOHN L. PYTHIAN, Newport.

To Fort Bliss, Tex., to examine the troops for mental and nervous diseases, and on completion to examine all the troops in the El Paso district, Lieut. EMORY L. DRAVO, Jeffersonstown.

To Fort Oglethorpe for instruction, Capt. FREDERICK I. YATES, Covington; Lieut. ROBERT F. JASPER, Somerset.

To Fort Riley for instruction, Capt. WILLIAM W. W. WILSON, Henderson.

To New York City, Bellevue Hospital, for instruction, and on completion *to his proper station*, from Camp Greene, Capt. BENJAMIN D. CHOATE, Louisville; from Fort Thomas, Capt. JOHN B. ROBARDS, Harrodsburg.

To San Francisco, Calif., Letterman General Hospital, for instruction, from Camp Kearny, Capt. JAMES W. HILL, Frankfort.

Louisiana

To Camp Colt, Gettysburg, Pa., for duty, from Fort Oglethorpe, Lieut. HENRY B. BURDESHAW, New Orleans.

To Fort Bliss, Tex., to examine the troops for mental and nervous diseases, and on completion to examine all the troops in the El Paso district, Major ROY McL. VAN WART, New Orleans.

To Fort Oglethorpe as instructor, from Camp Dix, Major KARL W. NEY, New Orleans.

To Walter Reed General Hospital, Takoma Park, D. C., for temporary duty, from Fort Oglethorpe, Capt. JOHN C. MARTIN, Lake Charles.

Maine

To Army Medical School for instructions, Lieut. FRANK O. BLOSSOM, Caribou.

To Camp Devens, Ayer, Mass., base hospital, from Fort Oglethorpe, Lieut. HAROLD M. GOODWIN, Lincoln.

To Camp Dix, Wrightstown, N. J., base hospital, from Portland, Lieut. CARL D. GRAY, Portland.

To Camp Hancock, Augusta, Ga., base hospital, from Boston, Lieut. RAYMOND VAN N. BLISS, Bangor.

To Camp Lee, Petersburg, Va., base hospital, from Camp Lee, Capt. TALCOTT O. VANAMEE, Portland.

To Camp Logan, Houston, Tex., for duty, from Camp MacArthur, Lieut. PRESTON W. WHITAKER, Unity.

To Hoboken, N. J., for duty, Lieut. JAMES M. STURTEVANT, Dixfield.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. BERNARD A. BAILEY, Wiscasset.

Maryland

To Camp Crane, Allentown, Pa., for duty, from Camp Dix, Capt. ALEXANDER D. McCONACHIE, Baltimore.

To Camp Laurel, Laurel, Md., for duty, from Army Medical School, Lieut. WILLIAM B. DAVIDSON, Baltimore.

To Camp Logan, Houston, Tex., for duty, from Camp MacArthur, Lieut. WILLIAM S. TILLETT, Baltimore.

To Camp Travis, Fort Sam Houston, Tex., as member of the board examining the command for tuberculosis, from Fort Riley, Capt. CHARLES W. RAUSCHENBACH, Baltimore.

To Danville, N. Y., for duty, Lieut. NOLAN D. C. LEWIS, Baltimore.

To Edgewood, Md., base hospital, Lieut. MOSES R. KAHN, Baltimore.

Fort Leavenworth, Kan., Signal Corps Training Camp, for duty, from Fort Riley, Lieut. JOSEPH C. SCHAFER, St. Louis.

To Fort Oglethorpe for instruction, Lieuts. BENJAMIN M. JAFFE, ALBERT L. WILKINSON, Baltimore.

To Gettysburg, Pa., for duty, from Fort Oglethorpe, Lieut. HENRY R. KRITZER, Baltimore.

To New Haven, Conn., Yale University Medical School, for duty, Lieut. WILLIAM P. FINNEY, Jr., Baltimore.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to Camp Greene*, Charlotte, N. C., base hospital, Lieut. VERNON H. CONDON, Baltimore.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. CHURCHILL F. WORRELL, Baltimore.

To San Juan, Porto Rico, base hospital, Lieut. GABRIEL RIGAU, Baltimore.

Massachusetts

To Army Medical School for instruction in orthopedic surgery and on completion *to his proper station*, from Boston, Major ROBERT W. LOVETT, Boston. For instructions, Lieuts. MICHAEL T. SWEENEY, Atlantic; HENRY J. KEANEY, Everett; ALBERT A. NAUMANN, Springfield.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. CLARENCE A. HYMAN, Boston.

To Camp Devens, Ayer, Mass., as division tuberculosis specialist, from Fort Oglethorpe, Capt. PARKER M. CORT, Springfield. Base hospital, Major EDWARD H. NICHOLS, Capts. ROBERT J. KISSOCK, Boston; WALTER A. LANE, Milton; Lieuts. MARTIN J. ENGLISH, ARCHIBALD McK. FRASER, JAMES J. PUTNAM, Jr., WOLFERT G. WEBBER, Boston; from Fort Leavenworth, Major JOHN J. THOMAS, Boston; from Fort Oglethorpe, Lieut. WILLIAM R. OHLER, Brookline; from Fort Riley, Capt. PAUL WITHINGTON, Boston; from New York City, Capts. DAVID D. SCANNELL, Boston; JOHN J. LAMBERT, Lowell.

To Camp Lee, Petersburg, Va., base hospital, Capt. JOHN G. HATHAWAY, New Bedford, and on completion *to his proper station*, Capt. RICHARD D. BELL, Somerville.

To Camp Logan, Houston, Texas., as a member of the board examining the command for mental and nervous diseases, from Camp Doniphan, Lieut. FRANCIS S. CALDICOTT, Milford.

To Camp Meigs, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. ISRAEL E. RUDMAN, New Bedford.

To Camp Sheridan, Montgomery, Ala., base hospital, from Fort Oglethorpe, Lieut. AUGUSTUS H. GALVIN, Springfield.

To Camp Sherman, Chillicothe, Ohio, Camp Lee, Petersburg, Va., and *Camp Taylor*, Louisville, Ky., for conference, and on completion *to his proper station*, from Camp Custer, Major WALTER R. WEISER, Springfield.

To Camp Stanley, Leon Springs, Tex., as orthopedic surgeon, from Fort Oglethorpe, Lieut. MARTIN J. SPELLMAN, Whitman.

To Camp Upton, Long Island, N. Y., as a member of the board examining the command for tuberculosis, from Springfield, Mass., Lieut. HARRISON M. STEWART, Pittsfield.

To Cape May, N. J., base hospital, from Camp Meade, Lieut. DONALD J. McPHERSON, Boston.

To Chicago, Ill., for duty, and on completion *to his proper station*, Major HORACE D. ARNOLD, Boston.

To Fort Oglethorpe for instruction, Lieuts. DEAN S. LUCE, Canton; HERBERT W. ELLAM, Gardner.

To Fort Sam Houston, Tex., for assignment to duty, from Camp Cody, Lieut. AIME W. FREGEAU, Fitchburg.

To Hoboken, N. J., for duty, Lieut. DAVID M. BUTLER, Brockton; from Dansville, Lieut. MERRICK LINCOLN, Worcester.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp McClellan, Lieut. KENNETH L. DOLE, Boston; from Camp Sheridan, Lieut. WYATT S. ROBERTS, Boston.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Hancock*, Augusta, Ga., base hospital, Lieut. PAUL C. BENNETT, Allison. On completion *to Camp Sherman*, Chillicothe, Ohio, base hospital, from Fort Oglethorpe, Lieut. RALPH W. HAYWOOD, Salem. For instruction from Camp Dix, Lieut. ARTHUR J. CANLEY, Methuen.

To Rockefeller Institute for instruction, and on completion to Bellevue Hospital, New York City, for further instruction, and on completion *to Camp Upton*, Long Island, N. Y., base hospital, Major HENRY T. HUTCHINS, Boston. For instruction in laboratory work, and on completion *to his proper station*, from Otisville, Capt. GEORGE L. SCHADT, Springfield.

To the inactive list, Major SAMUEL J. MIXTER, Boston.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. FRANK E. WHEATLEY, North Abington.

Resignation of Capt. OSCAR L. SPENCER, Lynn, accepted.

Michigan

To Army Medical School for instructions, Lieuts. WELLS B. FILLINGER, Grand Lodge; HAROLD L. HURLEY, JAMES A. McQUILLAN, Jackson; J. ATWOOD WHITAKER, West Branch.

To Camp Devens, Ayer, Mass., base hospital, Major WILEY E. WOODBURY, Detroit.

To Camp Grant, Rockford, Ill., as member of the board examining the command for tuberculosis, from Fort Riley, Capt. WILLIAM J. MARSHALL, Flint.

To Camp Hancock, Augusta, Ga., base hospital, from Madison, Lieut. JAMES RHINES, Laurium.

To Camp Lee, Petersburg, Va., for duty, from Camp Lee, Lieut. MORTIMER E. DANFORTH, Stanton.

To Camp Perry, Ohio, for duty, Lieut. GUY G. ALWAY, Whitmore.

To Camp Sherman, Chillicothe, Ohio, base hospital, Major WILLIAM T. DODGE, Big Rapids; Capt. ROBERT BEATTIE, Detroit.

To Camp Travis, Fort Sam Houston, Tex., for duty, from Camp Cody, Capt. ALLEN C. TIFFANY, Mackinaw.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to Camp Grant*, Rockford, Ill., base hospital, Lieut. JOHN J. WALSH, Escanaba.

To Fort Bliss, Tex., to examine the troops for mental and nervous diseases, and on completion to examine all the troops in the El Paso District, Lieut. JAMES A. BELYEA, Detroit.

To Fort Leavenworth, Kan., Signal Corps Training Camp, for duty, from Camp MacArthur, Lieut. VINCENT S. MANCUSO, Detroit.

To Fort Oglethorpe for instruction, Capts. SAMUEL C. CROW, Detroit; LUCIUS A. FARNHAM, Pontiac; Lieuts. MAURICE J. CROSS, Delton; DAVID C. EISELE, Gwinn; JOHN F. GRUBER, Mesick.

To Fort Riley for instruction, Lieut. HANA P. GOTFREDSEN, Onekama.

To Fox Hills, N. Y., for duty, from Allentown, Major FREDERICK W. BAESLACK, Detroit.

To Madison, Wis., University of Wisconsin, to make physical examinations and give medical attention to the drafted men to be enrolled at this institution, from Dansville, Lieut. BRUNO J. SAWICKI, Detroit.

To Mount Clemens, Mich., Selfridge Field, Signal Corps Aviation School, from Detroit, Lieut. FRANK L. RYERSON, Detroit.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Sheridan, Capt. FRANK C. KINSEY, Grand Rapids.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Hancock*, Augusta, Ga., base hospital, from Fort Oglethorpe, Lieut. HUGH R. HILDEBRANT, Dundee. On completion to *Camp Jackson*, Columbia, S. C., base hospital, from Fort Oglethorpe, Lieut. FRED N. BLANCHARD, Detroit.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Fort McHenry, Capt. GEORGE C. HAFFORD, Albion. On completion *to his proper station* from Camp Jackson, Lieut. EDWIN M. CHAUNCEY, Albion.

To Washington, D. C., Elizabeth Hospital, for intensive training, from San Antonio, Capt. MYRON S. GREGORY, Eureka.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. WILLIAM J. DUBOIS, Grand Rapids.

The following orders have been revoked: *To Fort Riley* for instruction, Capt. ANDREW A. McKAY, Manistee; Lieut. SETH E. GILKEY, Detroit.

Minnesota

To Army Medical School for instruction, Lieuts. ALBERT M. TREAT, Blooming Prairie; MICHAEL A. DESMOND, Glenwood; FRANK B. MACH, Minneapolis, HAROLD E. MARSH, Rochester; HARRY W. ARNDT, St. Cloud.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. PIO BLANCO, Rochester.

To Camp Colt, Gettysburg, Pa., for duty, from Mineola, Capt. JOHN W. LEE, Minneapolis.

To Camp Crane, Allentown, Pa., base hospital, from Camp Dix, Lieut. CHARLES D. SQUIRES, Rochester.

To Camp Dodge, Des Moines, Ia., as assistant to camp surgeon, from Fort Riley, Major PAUL B. COOK, St. Paul base hospital, Lieut. WALTER E. CAMP, Minneapolis.

To Camp Jackson, Columbia, S. C., for duty, from Camp Taliaferro, Capt. SOLOMON F. RUDOLF, Albert Lea.

To Camp Shelby, Hattiesburg, Miss., base hospital, from Rantoul, Major WALTER H. DARLING, Minneapolis; from Fort Oglethorpe, Lieut. THOMAS G. CLEMENT, Vernon Center.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to his proper station*, from Camp Custer, Capt. CHARLES R. CHRISTENSON, Starbuck; from Camp Sherman, Lieut. ADOLPH E. DETUNEO, Preston. On completion *to Camp Doniphan*, Fort Sill, Okla., base hospital, Lieut. WILFRED P. FRELIGH, Stillwater.

To Fort Oglethorpe for instruction, from Newport News, Lieut. JOSEPH H. COSGROVE, Duluth.

To Fort Riley as instructor, from Boston, Lieut. OTTO L. WINTER, St. Paul. For instruction, Lieuts. JOHN F. TRAXLER, Henderson; GILBERT HENDRICKSON, Lewistown; GEORGE L. JOHNSON, Newfolden.

To Fort Sam Houston, Tex., for assignment to duty, from Camp Cody, Capt. JAMES D. WALKER, Wykoff.

To Mineola, Long Island, N. Y., Hazelhurst Field, Signal Corps Aviation School, from Garden City, Lieut. REUBEN A. JOHNSON, Minneapolis.

Mississippi

To Army Medical School for instructions, Capt. HARVEY L. SHANNON, Itta Bona; Lieuts. RICHARD B. AUSTIN, Knoxo; FRANK A. ROGERS, McLaurin; FRANK L. McGAHEY, Sweatman.

To Camp Grant, Rockford, Ill., for duty, from Garden City, Lieut. GRAHAM W. DIGGS, Black Hawk.

To Camp Laurel, Laurel, Md., for duty, from Fort Oglethorpe, Lieut. WILLIAM C. HAYS, Blue Springs.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. ROBERT L. PEYTON, Jackson.

To Fort Oglethorpe for instruction, Lieuts. BURRELL S. HOOD, Bond; WILLIAM J. WHITEFOOT, Liberty; HENRY McC. BURNHAM, Moss Point.

To Fort Sam Houston, Tex., for assignment to duty, from Fort Oglethorpe, Lieut. JOHN H. WOOD, Roxie.

To Milwaukee, Wis., base hospital, from Camp Shelby, Lieut. LUTHER R. OTKEN, McComb.

To Newport News, Va., for duty, Lieut. ARTHUR S. BRISTOWN, Princeton.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Sevier*, Greenville, S. C., base hospital, Lieut. KUTCHEN T. KLEIN, Meridian. On completion *to his proper station*, from Camp Forrest, Lieut. JAMES S. REID, Lamkin.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Camp Sevier, Lieut. MARCELLUS C. GARNER, Meridian.

To Washington, D. C., gas defense service, for duty, Lieut. ROY W. CARRUTH, Tupelo.

Missouri

To Army Medical School for instructions, Capt. HUBERT B. BEEDLE, St. Louis; Lieuts. THOMAS A. KYNER, Kansas City; SAMUEL E. GASTON, Meta; JAMES E. WILLIAMS, HUGH J. WITTWER, St. Louis; ABRAHAM L. STEPP, Vanduser.

To Camp Dodge, Des Moines, Ia., as member of the board examining the command for tuberculosis, from Fort Riley, Lieut. JACOB I. KENNEDY, Frankford. Base hospital, from Camp Grant, Lieut. JOHN AULL, Kansas City.

To Camp Gordon, Atlanta, Ga., base hospital, from Dansville, Lieut. EUGENE D. McCARTY, St. Louis.

To Camp Grant, Rockford, Ill., and *Camp Sherman*, Chillicothe, Ohio, for duty, and on completion *to his proper station*, Major FREDERICK W. BAILEY, St. Louis.

To Camp McClellan, Anniston, Ala., base hospital, Lieut. NEIL S. MOORE, St. Louis.

To Camp Meade, Annapolis Junction, Md., to examine the command for mental and nervous diseases, from Jefferson Barracks, Lieut. JAMES F. McFadden, St. Louis.

To Camp Travis, Fort Sam Houston, Tex., as member of the board examining the command for tuberculosis, from Fort Riley, Lieut. HARRY M. STRACHAN, St. Louis. For duty, from Fort Riley, Lieut. JOSEPH C. SCHAFER, St. Louis.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to Camp Dodge*, Des Moines, Ia., base hospital, Capt. OWEN W. KRUEGER, Kansas City.

To Fort Des Moines, Ia., base hospital, Lieut. HORACE S. DOWELL, Clearmont.

To Fort Riley for duty, Capt. CLARENCE MARTIN, St. Louis. For instruction, Lieuts. REGINALD C. McD. MILLAR, Foristell; WILFORD H. UROUHART, Holliday; ARTHUR C. LEONARD, Kansas City; WILLIAM T. DEAN, PATRICK McGENNIS, St. Louis.

To Fort Sheridan, Ill., hospital train, Lieut. GEORGE D. McCARTY, Kansas City.

To Fox Hills, N. Y., for duty, from Dansville, Capt. ELBERT J. LEE, Jr., St. Louis.

To Hoboken, N. J., for duty, from Camp Meade, Lieut. JAMES B. BIGGS, Bowling Green; from Fort Riley, Lieut. JAMES C. LANDREE, St. Louis.

To Jefferson Barracks, Mo., for duty, from New York City, Capt. MARC R. HUGHES, St. Louis.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp MacArthur, Major JOHN C. MORFIT, St. Louis.

To Newport News, Va., for duty, Lieut. HOOPER W. WELCH, St. Louis.

To New York City, Bellevue Hospital, for instruction, and on completion *to his proper station*, from Camp Devens, Lieut. EDWARD X. LINK, St. Louis. Neurological Institute, for instruction, Lieut. SAMUEL F. WENNERMAN, St. Louis.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. EDWARD E. HEIPLE, St. Louis.

Resignation of Lieut. CLARENCE C. C. MAX, St. Louis, accepted.

Montana

To Army Medical School for instructions, Lieuts. LIONEL A. ANDERSON, Glendive; WALTER E. ESTABROOK, Mocassin.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieuts. ARTHUR A. HUSSER, Hingham; JOHN W. OLSON, Troy.

To Camp Sherman, Chillicothe, Ohio, *Camp Lee*, Petersburg, Va., and *Camp Zachary Taylor*, Louisville, Ky., for conference, and on completion *to his proper station*, from Camp Dodge, Major THOMAS C. WITHERSPOON, Butte.

To Camp Zachary Taylor, Louisville, Ky., for duty, from Army Medical School, Lieut. CARL O. RINDER, Deer Lodge.

To New York City for instruction, from Fort Riley, Lieut. EARL S. PORTER, Moore.

Nebraska

To Army Medical School for instructions, Lieut. OSCAR F. LANG, Falls City.

To Ann Arbor, Mich., Psychopathic Hospital, for intensive training, Lieuts. WARD W. HEDLUND, Ingleside; ANDREW J. SMITH, Salem.

To Camp Dodge, Des Moines, Ia., base hospital, from Fort Riley, Capt. HENRY R. MINER, Falls City.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to his proper station*, from Camp Dodge, Lieut. THOMAS E. ATKINSON, Mullen.

To Fort Des Moines, Iowa, base hospital, Lieut. EDWIN G. DAVIS, Lincoln; from Camp Pike, Lieut. HARRY E. FLANSBURG, Lincoln; from Camp Shelby, Capt. JOHN B. POTTS, Omaha; from Fort Oglethorpe, Lieut. GEORGE W. COVEY, Lincoln; from Fort Riley, Major CHARLES A. HULL, Capts. JOHN R. NILSSON, Omaha; JAMES C. WADDELL, Pawnee City; Lieuts. ROBERT C. PANTER, Dorchester; MILES J. BREUER, JAMES E. M. THOMSON, Lincoln; JOHN S. SIMMS, N. Platte.

To Fort Riley for instruction, Capts. FINDLEY J. McRAE, Albion; FRANK L. FRINK, Newman Grove.

To New York City, Neurological Institute, for instruction, and on completion to Hoboken, N. J., base hospital, from Fort Oglethorpe, Lieut. ABRAHAM GREENBERG, Omaha.

Nevada

To Fort Riley for instruction, Lieut. HALLE L. HEWETSON, Las Vegas.

New Hampshire

To Camp Perry, Ohio, for temporary duty, from Camp Custer, Capt. JOHN B. WARDEN, Whitefield.

To Camp Sevier, Greenville, S. C., base hospital, Lieut. MAURICE A. STARK, Goffstown.

To Fort Snelling, Minn., for duty, from Camp Pike, Major AMOS G. STRAW, Manchester.

To New York City, Bellevue Hospital, for instruction and on completion *to his proper station*, from Camp Devens, Capt. JOHN E. TOYE, Charlestown. *To New York City* for instruction, from Camp Dix, Lieut. RALPH S. PERKINS, Exeter.

New Jersey

To Army Medical School for instructions, Lieuts. ISADOR H. FRANKLIN, EDWIN PYLE, Jersey City.

To Bristol, Pa., for duty, from Dover, Lieut. ERNEST A. L. DICKINSON, Trenton.

To Camp Devens, Ayer, Mass., as member of a board examining the command for tuberculosis, from Fort Warren, Lieut. SAMUEL R. FAIRCHILD, Penn's Grove.

To Camp Sheridan, Montgomery, Ala., for duty, from Camp Sherman, Lieut. HOWARD S. SMITH, Newark.

To Camp Travis, Fort Sam Houston, Tex., as member of the board examining the command for tuberculosis, from Fort Riley, Lieut. CHARLES ENGLANDER, Cedar Grove.

To Fort Des Moines, Ia., for duty, from Army Medical School, Lieut. HALVOR L. HARLEY, Pleasantville.

To Fort McPherson, Ga., base hospital, from Fort Oglethorpe, Lieut. KENNETH E. McCAMEY, Jersey City.

To Fort Oglethorpe for instruction, Lieuts. KENNETH JOHNSON, Montclair; SYDNEY R. TITSWORTH, Plainfield.

To Hoboken, N. J., base hospital, Lieut. EVERETT A. TYLER, Haddon Heights. For duty, from Camp Lee, Lieut. AARON H. BALDWIN, East Orange.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Hancock*, Augusta, Ga., base hospital, Capt. JOHN A. FREESE, East Orange. On completion *to Camp Greene*, Charlotte, N. C., base hospital, from Fort Oglethorpe, Lieut. LEONARD M. KALAHER, Jersey City.

To Washington Barracks, D. C., for duty, from Fort Oglethorpe, Lieut. HARVEY M. EWING, Montclair.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. HARRY VAUGHAN, Morristown.

New Mexico

To Austin, Tex., University of Texas, for duty, Capt. THOMAS P. MARTIN, Taos.

To Camp Travis, Fort Sam Houston, Tex., as member of a board examining the command for tuberculosis, from Fort Riley, Lieut. ROLAND R. CROSS, Dulce.

To Fort Riley for instruction, Lieut. LEWIS B. ROBINSON, Pinos Altos.

To San Antonio, Tex., Kelly Field, for duty, Capt. WILLIAM MacLAKE, Silver City.

New York

To Army Medical School for instruction, Capt. ARTHUR F. HOLDING, New York City; Lieuts. SAMUEL L. TRUEX, Middletown; NATHANIEL CROST, ROBERT J. SHEA, New York City; HAROLD F. MORRISON, Tuxedo Park.

To Boston, Mass., Harvard Graduate Shool of Medicine, for instruction, from Fort Delaware, Lieut. ROWLAND P. STANLEY, New York City; from Fort Oglethorpe, Lieuts. MORRIS T. KOVEN, Brooklyn; ISIDOR GRAD, New York City; HERBERT I. KALLET, Syracuse.

To Camp A. A. Humphreys, Accotink, Va., for duty, Lieut. JACOB J. STEINFELDER, New York.

To Camp Colt, Gettysburg, Pa.., for duty, from Camp Logan, Lieut. FRANK A. WALDER, Lockport.

To Camp Devens, Ayer, Mass., base hospital, from Camp Dix, Capt. HENRY W. JACKSON, New York City; from Camp Dodge, Lieut. JOHN H. REYNOLDS, Brooklyn. As member of a board examining the command for tuberculosis, from Fort Warren, Lieuts. HERMAN JUDKOWITZ, Brooklyn; CLYDE D. OATMAN, Poolville.

To Camp Grant, Rockford, Ill., for duty, from Camp Bowie, Lieut. HARRY C. SAUNDERS, New York City; from Garden City, Lieuts. NORMAN L. SHEEHE, Dunkirk; HERMAN LEVISON, New York City.

To Camp Greene, Charlotte, N. C., for duty, from Camp Jackson, Major HARRY J. LIPES, Albany.

To Camp Lee, Petersburg, Va., base hospital, Lieut. ALEXIS V. MOSCHCOWITZ, New York City; from Camp McClellan, Lieut. RAYMOND A. VOISINET, New York; from Camp Pike, Lieut. CHARLES PHILLIPS, New York City.

To Camp Logan, Houston, Tex., for duty, from Camp Bowie, Capt. STEPHEN J. H. REED, Fultonville.

To Camp Meade, Annapolis Junction, Md., for duty, Lieut. THOMAS F. MAHER, New York. To examine the command for mental and nervous diseases, Lieut. MELVIN J. TAYLOR, New York.

To Camp Meigs, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. PHILIP KORN, New York.

To Camp Sevier, Greenville, S. C., base hospital, Lieut. HEMAN L. DOWD, New York City; from Fort Oglethorpe, Lieut. BERRYMAN GREEN, Jr., New York City.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Boston, Capt ALFRED H. PARSONS, Great Neck.

To Camp Upton, Long Island, N. Y., as member of board examining the command for tuberculosis, from Springfield, Lieut. ADELBERT C. ABBOTT, Syracuse; base hospital, from New York City, Lieut. IRA W. LIVERMORE, Gowanda.

To Camp Wheeler, Macon, Ga., base hospital, from Camp Kelly, Capt. DONALD T. McPHAIL, New York City.

To Camp Zachary Taylor, Louisville, Ky., as member of the tuberculosis examining board, from Fort Oglethorpe, Lieut. ST. CLAIR BARDEN, Poughkeepsie. Base hospital, Lieut. ROBERT G. CARLIN, New York City.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion, *to his proper station*, from Camp Grant, Capt. JOHN M. KEYES, New York City.

To Fort Du Pont, Delaware, for duty, from Fort Oglethorpe, Lieut. MERLE Q. HOWARD, New York City.

To Fort Keogh, Mont., for duty from Garden City, Major JOSEPH B. COOKE, Cooperstown.

To Fort McHenry, Md., base hospital, Major WILLIAM F. HOMAN, New York City. For temporary duty, from Fort Oglethorpe, Lieut. BROOKS W. McCUEN, Syracuse.

To Fort Oglethorpe for instruction, Major FRED N. ALBEE, New York City; Capts. WALTER M. LIPPINCOTT, Long Island; ARTHUR E. GADBOIS, New York City; Lieuts. ABRAHAM FELDMAN, IRVING D. LAUDENTSCHER, DONALD E. McKENNA, JACOB J. SEIDENSTEIN, Brooklyn; LEO M. SACHS, HAWORTH R. TRAVER, Buffalo; STANLEY A. ALDERSON, WELLINGTON B. HUNTLEY, SIDNEY P. LEVY, THOMAS F. MAHER, MAX J. SCHROEDER, ROBERT J. SHEA, EDWIN D. SMITH, ELMER P. WEIGEL, New York City; ANTHONY BONDI, HAROLD L. ST. JOHN, Rochester; from Hoboken, N. J., Capt. HAROLD L. HUNT, New York City; from Springfield, Capt. BRUNO S. HOROWICZ, New York; from Camp Upton, Lieuts. FERDINAND F. SEIGEL, Brooklyn; GEORGE M. OPPERMANN, Buffalo.

To Fort Porter, N. Y., for temporary duty, Capt. JOHN A. HEATLY, Schenectady.

To Fort Riley, as assistant to camp surgeon, from Surgeon-General's Office, Major GEORGE DRAPER, New York.

To Fort Sam Houston, Tex., for assignment to duty, from Camp Cody, Lieut. HORD SHARP, New York.

To Fort Sill, Okla., Post Field, for duty, from San Antonio, Capt. JOHN D. GULICK, Schenectady.

To Fort Slocum, Camp Upton, Long Island, and *U. S. Army General Hospital*, Williamsbridge, N. Y., *Harvard Graduate School of Medicine*, Boston; *Fort Banks*, Winthrop, and *Camp Devens*, Ayer, Mass., *U. S. Army General Hospital*, Fort Ontario, N. Y., *Camp Dix*, Wrightstown, N. J., *U. S. Filling Plant*, Edgewood, Md., *Camp Meade*, Annapolis Junction, Md., and *Fort Myer, Va.*, for orthopedic instruction, and on completion *to his proper station*, from New York City, Major BRAINERD H. WHITBECK, New York City.

To Gettysburg, Pa., for duty, from Fort Oglethorpe, Lieut. BROOKS W. McCUEN, Syracuse.

To Hoboken, N. J., base hospital, Majors FREDERICK M. DEARBORN, New York City; ARTHUR R. GRANT, Utica; Capt. EDWARD G. RANDALL, Waterville; Lieuts. ALFRED A. RICHMAN, Brooklyn; FRANCIS T. CHASE, Utica; from Camp Lee, Capt. LLEWELLYN E. HETRICK, New York City. For duty, Lieuts. LOUIS COHEN, SAMUEL KRANSHAR, Brooklyn; JOHN A. CONLEY, Penn Yan; from Fort Oglethorpe, Lieut. LAWRENCE E. COTTER, Poughkeepsie.

To Jackson Barracks, La., for duty, from Fort Oglethorpe, Capt WALDEMAR T. BROWN, Brooklyn.

To Lexington, Ky., University of Kentucky, to make physical examinations, and give medical attention to the drafted men to be enrolled at that institution, from Camp Custer, Capt. GEORGE F. MILLS, Oneida.

To Middletown, Pa., for duty, from Boston, Capt. WILLIAM W. LAING, Brooklyn.

To Mineola, Long Island, N. Y., Hazlehurst, Signal Corps Aviation School, from Garden City, Lieuts. HARRY FRIED, PAUL B. JENKINS, New York City.

To Mount Clemens, Mich., Selfridge Field, Signal Corps Aviation School, from Mineola, Lieut. JAMES P. FITZGERALD, New York City.

To New Haven, Conn., for duty, from Fort Riley, Capt. JOHN E. WHITE, Port Chester.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Travis, Lieut. FRANK E. FOX, Fulton.

To New York City for instruction, from Army Medical School, Capt. CHARLES F. E. PANNACI, Gloversville; from Camp Dix, Lieut. FRANK G. WALZ, Buffalo, *Bellevue Hospital*, for instruction, and on completion *to his proper station*, from Camp Greene, Capt. JAMES R. SWANICK, Saratoga; from Williamsbridge, Capt. HERBERT R. CHARLTON, Bronxville. On completion *to Camp Hancock*, Augusta, Ga., base hospital, Lieut. OSCAR I. BAUMAN, New York. On completion *to Camp Wheeler*, Macon, Ga., base hospital, Lieut. PETER F. PURCELL, Salem. *Neurological Institute* for intensive training, Capts. WILLIAM M. KENNA, Mount Vernon; JAMES F. MUNSON, Sonyea.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to Camp Greene*, Charlotte, N. C., base hospital, Capt. GEORGE W. CONTERNO, New York City. On completion *to his proper station*, from Camp Dix, CLARENCE B. GOULD, Batavia.

To Pittsburgh, Pa., for instruction, and on completion *to Camp Greene*, Charlotte, N. C., base hospital, from Fort Oglethorpe, Lieut. JAMES R. BOYD, New York City. On completion *to Camp Wadsworth*, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieuts. ISAAC E. GREENBERG, Brooklyn; LOUIS CARP, New York City.

To Rantoul, Ill., Chanute Field, Signal Corps Aviation School, for duty, from Camp Logan, Capt. SAMUEL M. STRONG, New York.

To Rockefeller Institute for instruction, and on completion *to Williamsbridge, N. Y.*, for temporary duty, Major JOHN R. JENNINGS, Brooklyn. On completion *to Bellevue Hospital, N. Y.*, for further instruction, Lieut. JAMES C. SULLIVAN, Buffalo. For instruction in laboratory work, and on completion *to Army Medical School* for duty, Lieuts. ETHELBERG E. CALLAGHAN, Brooklyn; RALPH F. GREGORIOUS, Corning. For instruction in the serum therapy of pneumonia, from Camp Devens, Lieut. ARTHUR H. TERRY, New York City.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, Lieut. WILLIAM J. A. DONAHUE, Huntington; from Camp Meade, Lieut. ONSLOW A. GORDON, Brooklyn.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieuts. HERBERT B. WILCOX, New York City; WARD W. MILLIAS, Rome.

Resignation of Lieut. GEDNEY JENKS, Hastings-on-Hudson, accepted.

Letter directing Lieut. HAROLD E. SHAVER, Sherman, *to Hoboken, N. J.*, for duty, revoked.

North Carolina

To Army Medical School for instruction, Lieut. WILLIAM C. WILLIAMS, Apex.

To Camp A. A. Humphreys, Accotink, Va., for duty, Lieut. THOMAS C. LOVELACE, Mooresboro; from Fort Oglethorpe, Capt. GEORGE S. MACPHERSON, Highlands.

To Camp Perry, Ohio, for temporary duty, from Long Island, Lieut. JOHN C. DYE, Statesville.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to his proper station*, from Camp Grant, Lieut. JOSEPH W. HOOPER, Wilmington.

To Fort Oglethorpe for instruction, Lieut. GEORGE T. WATKINS, Durham.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Fort McPherson, Capt. THOMAS M. CHANEY, Winston-Salem. On completion *to Camp Jackson*, Columbia, S. C., base hospital, Lieut. LEE JOHNSON, Gastonia.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. PERCIVAL R. BENNETT, Bryson City.

Resignation of Lieut. ERNEST L. ENGLISH, Rosman, accepted.

North Dakota

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. JAMES F. HANNA, Fargo.

To Camp Custer, Battle Creek, Mich., base hospital, Lieut. FRANCIS J. SCULLY, Bottineau.

To Camp Greene, Charlotte, N. C., *Camp Meade*, Annapolis Junction, Md., and *Camp Lee*, Petersburg, Va., for conference, and on completion *to his proper station*, from Camp Jackson, Major ERIC P. QUAIN, Bismarck.

To Fort Riley for instruction, Lieuts. JOHN A. JOHNSON, Grand Forks; DENNIE E. RYAN, Nankison.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Beauregard, Lieut. GEORGE V. JAMIESON, Devil's Lake.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Jackson*, Columbia, S. C., base hospital, from Camp Dodge, Lieut. ALOYSIUS P. NACHTWEY, Dickinson.

Letter directing Lieut. DENIS E. RYAN, Hankison, to Fort Riley for instruction, revoked.

Ohio

To Ann Arbor, Mich., Psychopathic Hospital, for intensive training, Lieut. JAMES McC. McGEORGE, Salem.

To Arcadia, Fla., Signal Corps Aviation School, from Dayton, Ohio, Major COURTNEY P. GROVER, National Military Home.

To Army Medical School for instructions, Lieuts. BRADNER E. GORHAM, Kent; GEORGE DUB. DUNN, Youngstown.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. MARTIN E. HERRELL, Woodstock.

To Camp Colt, Gettysburg, Pa., for duty, from Army Medical School, Lieut. THOMAS F. HIGGINS, Toledo.

To Camp Devens, Ayer, Mass., as assistant to the camp surgeon, from Camp Greene, Major PAUL G. WOOLLEY, Cincinnati. Base hospital, from Army Medical School, Lieut. EDWARD REMY, Jr., Mansfield; from Hoboken, Lieut. MILTON J. LONGSWORTH, Lima.

To Camp Grant, Rockford, Ill., as member of the board examining the command for tuberculosis, from Camp Dodge, Lieut. JOSEPH M. ULRICH, Akron.

To Camp Hancock, Augusta, Ga., for duty, from Camp Gordon, Lieut. CHARLES R. DEEDS, Dalton.

To Camp Laurel, Laurel, Md., for duty, from Fort Oglethorpe, Lieut. NEIL E. TAYLOR, Cincinnati.

To Camp Perry, Ohio, for temporary duty, from Long Island, Lieut. GEORGE W. MANNING, Kelleys Island.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieuts. JESSE E. THOMPSON, Bristolville; KARL H. BARTH, Chatfield; NATHAN H. KELLER, Cincinnati; WILLIAM A. LIESER, Fort Recovery; JOSEPH B. McHENRY, Hanoverton.

To Camp Taliaferro, Fort Worth, Texas, Signal Corps Aviation School, from Mineola, Lieut. FRANCIS W. THOMAS, Piqua.

To Camp Wheeler, Macon, Ga., base hospital, from Camp Doniphan, Lieut. CHELSEA A. COLEMAN, Dayton.

To Camp Zachary Taylor, Louisville, Ky., as member of the tuberculosis examining board, from Fort Oglethorpe, Lieut. ALEXANDER R. JOHNSTON, Lore City.

To Fort Oglethorpe for instruction, Capt. LUCIUS B. GOODYEAR, Toledo; Lieuts. LUCIAN D. CLARK, Akron; FRANK E. AYERS, Celina; HORACE F. TANGEMEN, Cincinnati; LESLIE J. PAUL, Cleveland; EDWARD VON DEN STEINEN, Cleveland Heights; ARTHUR C. RICHARDS, Columbus; MERLE D'A. McCUTCHEON, East Liverpool; FRED C. HUNT, Girard; JAMES F. EARP, Holgate; THOMAS A. MINAHAN, Jr., Hubbard; from Camp Shelby, Capt. CARL MULKY, Warrensville; from Chicago, Capt. JOHN W. HARTMAN, Findlay.

To Fort Sam Houston, Texas, for assignment to duty, from Fort *Oglethorpe*, Lieut. THOMAS H. WALKER, Cleveland.

To Fox Hills, N. Y., for duty, from Camp Grant, Lieut. CHARLES W. BEAMAN, Cincinnati.

To Hoboken, N. J., base hospital, Lieut. FRED B. GROSVENOR, Columbus.

To New York City, Orthopedic Hospital, for instruction, from Chicago, Lieuts. JOHN K. LAWSON, LEONARD E. STUTSMAN, Dayton.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Camp Lee, Lieut. BENJAMIN H. GILLESPIE, Akron.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. LOCKE E. W. HEABLER, Cleveland.

Oklahoma

To Army Medical School for instruction, Lieut. THOMAS B. TRIPLETT, Moreland.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. ALONZO P. GEARHART, Blackwell.

To Camp Bowie, Fort Worth, Texas, base hospital, from Oklahoma City, Lieut. WILLIS K. WEST, Oklahoma City.

To Fort Riley for instruction, Lieut. EDWARD S. WEAVER, Dill City.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to Camp McArthur*, Waco, Texas, base hospital, Lieut. ROBERT B. GIBSON, Oklahoma City.

Letter directing Lieut. HERBERT V. L. SAPPER, Oklahoma City, *to Fort Riley* for instruction, revoked.

Oregon

To Army Medical School for instruction, Lieut. WENDELL J. PHILLIPS, Cornwallis.

To Camp Lewis, American Lake, Washington, base hospital, from Portland, Capt. JOSEPH L. McCOOL, Portland.

To Fort Riley for instruction, Lieuts. JAMES L. WOODEN, Clatskanis; EDWARD L. ZIMMERMAN, Eugene; HERMAN R. KAUFFMAN, Forest Grove.

Pennsylvania

To Army Medical School for instructions, Lieuts. HENRY A. LAYE, Galeton; WILLIAM F. PETERS, Kelly Station; JACOB K. MARKS, Philadelphia; DAVID M. SHOEMAKER, Waynesboro.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieuts. WILLIAM C. KELLER, New Bethlehem; CHARLES F. BUTLER, Pittsburgh.

To Camp A. A. Humphreys, Accotink, Va., for duty, Capt. ANDREW A. O'DANIEL, HARRY A. DUNCAN, JOSEPH M. MIRMAN, Philadelphia.

To Camp Colt, Gettysburg, Pa., for duty, from Army Medical School, Lieut. JOHN W. BANCROFT, Johnstown.

To Camp Dix, Wrightstown, N. J., base hospital, from Army Medical School, Lieut. MAX A. BLUMER, Pittsburgh.

To Camp Dodge, Des Moines, Iowa, base hospital, from Camp Custer, Capt. WILLIAM W. RICHARDSON, Mercer.

To Camp Grant, Rockford, Ill., for duty, from Garden City, Lieuts. ROBERT E. BARTO, Elizabethville; MELVILLE M. PALMER, Homer; HERBERT B. SHEARER, Norristown; VICTOR J. B. FRIES, Philadelphia.

To Camp Greene, Charlotte, N. C., base hospital, from Fort Oglethorpe, Lieut. SCOTT A. NORRIS, Homestead.

To Camp Logan, Houston, Texas, for duty, from Camp Cody, Lieut. JOHN N. NEWHOUSE, Pittsburgh.

To Camp Pike, Little Rock, Ark., base hospital, from Pittsburgh, Capt. RALPH V. ROBINSON, Pittsburgh.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. JAMES L. HEARD, North East.

To Camp Sheridan, Montgomery, Ala., base hospital, Lieut. SETH A. BRUMM, Philadelphia.

To Camp Sherman, Chillicothe, Ohio, as orthopedic surgeon, from Fort Oglethorpe, Lieut. JAMES B. HELLER, Pottsville.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Camp Joseph E. Johnston, Lieut. ADDISON M. ROTHROCK, Reading; for duty from Camp Zachary Taylor, Lieut. THOMAS S. HICKS, Braddock.

To Camp Wheeler, Macon, Ga., as orthopedic surgeon, from Fort Oglethorpe, Lieut. BROWN FULTON, Pittsburgh.

To Chicago, Ill., Presbyterian Hospital, for inspection, and on completion *to his proper station*, from Fort Riley, Lieuts. GEORGE M. PURVES, ARTHUR R. WOODS, Philadelphia.

To Edgewood, Md., base hospital, Lieut. HENRY L. PICARD, Philadelphia; from Camp Pike, Capt. EARL McC. McLEAN, Eldred.

To Fort Jay, N. Y., for duty, Lieut. HAROLD A. GHERING, Edinboro.

To Fort Oglethorpe for instruction, Lieuts. W. STURGIS FRANKENBURGER, Allison; ALEXANDER W. SPEARS, Brownsville; FRANCIS H. MURRAY, Chester; RAYMOND J. HAUSER, Danville; FRANK F. D. RECKFORD, GEORGE A. ZIMMERMAN, Harrisburg; JOHN B. CRITCHFIELD, Lock Haven; CHARLES D. DIETTERICH, Parkerford; CHARLES A. BIGLER, Jr., ALFRED A. FERRY, LINWOOD L. RIGHTER, LOUIS SELIGMAN, JOHN H. WEBER, Philadelphia; HERBERT LER. JONES, Pittsburgh; SIMON B. GLICK, Reading.

To Fort Sam Houston, Texas, for assignment to duty, from Camp Cody, Lieut. JOHN D. PERKINS, Jr., Philadelphia; from Fort Oglethorpe, Lieuts. EDWIN S. POTTER, Ardmore; BARTON BROWN, Ellentown.

To Hoboken, N. J., base hospital, Lieut. ROBERT V. WHITE, Scranton; from Camp Dix, Lieut. KARL S. SIMPSON, Pittsburgh; from Fort Oglethorpe, Lieut. CHARLES D. SAUL, Philadelphia. For duty, Lieut. MICHAEL P. CORCORAN, Philadelphia.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Upton*, Long Island, N. Y., base hospital, from Fort Oglethorpe, Lieut. WILLIAM F. HERBST, Allentown.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to his proper station*, from Camp Lee, Capt. WILLIAM D. HUNTER, Monessen; from Camp Jackson, Lieut. ROBERT N. McIVER, Philadelphia.

To Pittsburgh, Pa., for instruction, and on completion *to Camp Shelby*, Hattiesburg, Miss., base hospital, Lieut. WILLIAM P. NOLAN, New Kensington.

To Rochester, N. Y., base hospital, Lieut. HIRAM RANDALL, Philadelphia.

To Rockefeller Institute for instruction, and on completion *to Camp Sherman*, Chillicothe, Ohio, base hospital, from Camp Zachary Taylor, Capt. JOSEPH D. FARRAR, Philadelphia. For instruction in laboratory work, and on completion *to Army Medical School* for duty, Lieut. FRED B. HARRINGTON, Pittsburgh.

To Walter Reed General Hospital, Takoma Park, D. C., for temporary duty, from Surgeon-General's Office, Lieut. CARL C. YOUNT, Philadelphia.

Honorably discharged, Lieut. JOHN O. CALHOUN, Pittsburgh. On account of physical disability existing prior to entrance into the service, Lieuts. JOHN S. ANDERSON, Greensburg; JOHN J. DAILEY,

McAdoo; CHARLES J. CAVANAGH, CLARENCE W. JUDD, Philadelphia; LEO DEL PARRY, Rock Glen.

Resignation of Capt. JAMES C. WILSON, Philadelphia, accepted.

Letter directing Lieut. HARRY J. OWENS, Hazleton, *to Hoboken, N. J.*, for duty, revoked.

Porto Rico

To Army Medical School for instruction, Lieut. JUAN R. LAUGIER, San Juan.

To Camp Colt, Gettysburg, Pa., for duty, from Garden City, Lieut. MANUEL D. GARCIA, Barceloneta.

To San Juan, P. R., base hospital, Lieut. LUIS F. GONZALEZ, Gurabo. For duty, Lieut. JAIMIE J. FIGUERAS, San Juan.

To Washington, D. C., for consultation, and on completion *to San Juan, P. R.*, Major WILLIAM F. LIPPITT, San Juan.

Rhode Island

To Camp Lee, Petersburg, Va., base hospital, from Fort Oglethorpe, Capt. ALLEN A. WEEDEN, Woonsocket.

To New York City, Neurological Institute, for instruction, Capts. JOHN B. FERGUSON, HERMAN C. PITTS, Providence. Bellevue Hospital, for instruction, and on completion *to Camp McClellan*, Anniston, Ala., base hospital, Lieut. GEORGE G. BERGERON, Warren.

South Carolina

To Army Medical School for instruction, Lieut. THOMAS A. PITTS, Charleston.

To Camp Laurel, Md., for duty, from Fort Oglethorpe, Lieut. ALLSTON N. WILLCOX, Nesmith.

To Fort Oglethorpe for instruction, Lieuts. HENRY P. WAGENAR, Charleston; CLAUDE B. MILLS, Cross Hill.

South Dakota

To Army Medical School for instructions, Lieut. WALTER C. MOODIE, Elk Point.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Riley, Lieut. ALEXANDER O. FASSER, Bellefourche.

To Camp Lewis, American Lake, Wash., base hospital, Lieut. FRANK C. SMITH, Yankton.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to Camp Custer*, Battle Creek, Mich., base hospital, Capt. ARASTUS V. ELLIOTT, Beresford.

To Fort Riley for instruction, Lieuts. ALBIN D. SCHEIB, Hitchcock; ALBERT I. HAUGEN, McBridge.

Tennessee

To Army Medical School for instructions, Lieuts. THOMAS E. WRIGHT, Bethpage; VIVIEN P. RANDOLPH, Memphis; IRA R. SISK, HUGH D. WHITE, Nashville.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. CECIL E. WARDE, Memphis.

To Camp Alfred Vail, Little Silver, N. J., for duty, Lieut. JOSEPH P. DELANEY, Chattanooga.

To Camp Sevier, Greenville, S. C., base hospital, from Camp Meade, Lieut. ALLEN L. LEAR, Sewanee.

To Camp Travis, Fort Sam Houston, Texas, base hospital, from San Antonio, Lieut. FLEMING J. O'CONNER, Jackson.

To Dallas, Texas, Love Field, Signal Corps Aviation School, from Camp MacArthur, Major VERNON K. EARTHMAN, Murfreesboro.

To Fort Oglethorpe for instruction, Capts. WILLIAM H. L. WHITE, Knoxville; MATHIAS B. MURFREE, Murfreesboro; Lieuts. COMPTON N. CROOK, Moscow; HEDDY S. SHOULDERS, Springfield; WILLIAM B. NASH, Stanton.

To Gettysburg, Pa., from Fort Oglethorpe, Lieut. JOHN W. FROST, Fruitland.

To New Haven, Conn., for duty, from Camp Devens, Lieut. LEOPOLD SHUMACKER, Chattanooga.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Meade*, Annapolis Junction, Md., base hospital, Capt. FRANK GRAHAM, Memphis.

Honorably discharged, Lieuts. WILLIAM H. DELAP, LaFollette; CHESTER T. WATERS, Memphis. On account of physical disability existing prior to entrance into the service, Lieut. CLARENCE F. FOWLER, Llano.

The following orders have been revoked: *To Camp Pike*, Little Rock, Ark., for duty, Lieut. CARL R. CRUTCHFIELD, Nashville. *To Fort Oglethorpe*, base hospital, Major FRANK D. SMYTHE, Memphis.

Texas

To Army Medical School for instructions, Capt. MICHAEL M. WALKER, Wichita Falls; Lieuts. HARRY W. LEGGETT, Dallas; FREDERICK L. STORY, Ennis; WILLIAM O. PADGETT, Graham; WILLIAM K. LOGADON, Marlin; COLE F. SMITH, San Antonio.

To Camp Shelby, Hattiesburg, Miss., for duty, from Benbrook, Lieut. STERLING P. BOOTHE, Westhoff.

To Camp Zachary Taylor, Louisville, Ky., base hospital, Major ALFRED C. McDANIEL, San Antonio.

To Fort McPherson, Ga., for duty, from Camp Gordon, Lieut. CHARLES W. STEVENSON, Lorane.

To Fort Oglethorpe for instruction, Capt. EDWARD C. FOSTER, Whitt; Lieut. WILLIAM L. BABER, Winnsboro. *To Fort Riley* for instruction, Lieuts. WILLIAM C. KIDWELL, Bryans Mill; FRANK S. GLOVER, Jr., Houston; JOHN E. LATTIMORE, Waco.

To Mineola, L. I., N. Y., Hazelhurst Field, Signal Corps Aviation School, from Austin, Capt. ROBERT A. TRUMBULL, Dallas; from San Antonio, Lieut. WILSON M. BASSETT, San Antonio.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to his proper station*, from Camp Bowie, Capt. WILLIAM W. FITZPATRICK, Paris; Lieut. WILLARD C. HEARIN, Canton; from Camp Logan, Capt. WILLIAM F. McMANUS, Lieut. FRANK N. HAGGARD, San Antonio.

To Philadelphia, Pa., University Hospital, for instruction, and on completion *to Camp Wadsworth*, Spartanburg, S. C., base hospital, from Camp Wadsworth, Lieut. THOMAS P. McCLENDON, Wortham.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School* for duty, Lieut. HUBERT L. BROWN, Sherman.

To San Antonio, Texas, Kelly Field, for duty, Capt. WALTER R. RUSSELL, Mart.

To Waco, Texas, Aviation Section Signal Corps, Lieuts. BEN C. SMITH, Brandon; Y. FRANK HOPKINS, Thrall.

To Washington, D. C., gas defense service, for duty, Lieut. JOHN W. GOODS, San Antonio.

Resignation of Lieut. HENRY BRADBROOK, Cat Springs, accepted.

Utah

To Fort Riley for instruction, Capt. CARL L. SANDBERG, Salt Lake City, Lieuts. GEORGE W. HANKS, Lehi; GEORGE W. GREEN, Vernal.

Vermont

To Army Medical School for instruction, Lieut. WILLIAM G. WATT, Vergennes.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. ALBION A. CROSS, Williamstown.

To Camp Gordon, Atlanta, Ga., base hospital, from Army Medical School, Lieut. JOHN P. TIERNEY, St. Johnsburg.

To Gettysburg, Pa., for duty, from Fort Oglethorpe, Lieut. ROWLEY S. FLAGG, North Troy.

Virginia

To Camp Lee, Petersburg, Va., base hospital, Major STUART McGUIRE, Lieut. ROY C. FRAVEL, Richmond; from Camp Doniphan, Capt. ERASMUS G. HOPKINS, Glen Allen; from Camp Greene, Capt. PAUL V. ANDERSON, Richmond; from Camp Jackson, Lieut. QUINTUS H. BARNEY, Richmond; from Camp Sevier, Lieut. WILLIAM B. PORTER, Richmond; from Fort Oglethorpe, Lieuts. FRANK C. PRATT, Fredericksburg; WILLIAM B. HOPKINS, ROBERT G. WILLIS, Richmond; from New York City, Capt. FREDERICK M. HODGES, Richmond; from Rockefeller Institute, Lieut. JOHN O. BOYD, Roanoke.

To Camp Sevier, Greenville, S. C., base hospital, Capt. BURNLEY LANKFORD, Norfolk; from Army Medical School, Lieut. BEVERLY R. WELLFORD, Richmond.

To Camp Zachary Taylor, Louisville, Ky., as member of the tuberculosis examining board, from Fort Oglethorpe, Lieut. WILLIAM B. McILLWAINE, III, Petersburg.

To Fort Des Moines, Iowa, base hospital, from Newport News, Lieut. FAYETTE A. SINCLAIR, Richmond.

To Fort Snelling, Minn., for duty, from Chicago, Major RHODRIC W. BROWNE, Norfolk.

To Mineola, L. I., N. Y., Hazelhurst Field, Signal Corps Aviation School, from Fort Monroe, Capt. WILLIAM W. GILL, Richmond.

To Waynesville, S. C., for duty, from duty as a contract surgeon, Lieut. DEAN B. COLE, Catawba Sanatorium.

Letter directing Lieut. CARRINGTON WILLIAMS, Richmond, *to Fort Oglethorpe* for instruction, from Richmond, revoked.

Washington

To Army Medical School for instructions, Lieuts. ALBERT W. TIEDEMANN, Baker; JOHN A. BOWLES, Black Diamond.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Flagler, HERBERT Y. BELL, Centralia.

To Camp Kearney, Linda Vista, Calif., base hospital, Capts. RICHARD H. LYON, Bothell; FRANK T. WILT, Seattle; Lieuts. HOWARD C. RANDOLPH, Aberdeen; WILLIAM C. KANTNER, HOWARD J. KNOTT, Seattle; from Camp Lewis, Capt. EDWARD P. PICK, Seattle; Lieut. GUY E. MARCY, Montesano; from Vancouver Barracks, Capt. FOREST A. BLACK, Seattle.

To Fort Riley for instruction, Lieuts. THEODORE L. BORDSEN, WILLIAM W. MATTSON, Seattle; from Portland, Oregon, Lieut. JAMES B. COUCHE, Twisp.

To Monterey, Calif., for duty, from Camp Fremont, Capt. SHIRLEY Q. ELMORE, Pasco.

To New York City, Neurological Institute, for instruction, from Camp Lewis, Capt. WILMOT DEL. READ, Tacoma. On completion *to Hoboken, N. J.*, base hospital, from Camp Lewis, Capt. ALFRED J. HELTON, North Yakima.

To Philadelphia, Pa., University Hospital for instruction, and on completion *to his proper station*, from Camp Dix, Lieut. KARL S. STAATZ, Tacoma.

To Waynesville, N. C., for duty, from Fort Riley, Capt. KENELM WINSLOW, Seattle.

West Virginia

To Army Medical School for instruction, Lieuts. DAVID B. EALY, IVNA H. STIDGER, Moundsville.

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, Fort Oglethorpe, Lieut. EARL B. HENSON, Charleston.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. RUFUS M. MUSICK, Gilbert.

To Fort Oglethorpe, for instruction, Capt. HARRY G. STEELE, Bluefield.

To New Orleans, La., Charity Hospital, for instruction, and on completion *to Camp Shelby*, Hattiesburg, Miss., base hospital, from Jackson Barracks, Lieut. LATIMER P. JONES, Pennsboro.

To Rockefeller Institute for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Lieut. SOLOMON L. CHERRY, Clarksburg.

Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. GEORGE W. SHRIVER, Glendenin.

Resignation of Lieut. ALVIN McCLUNG, Pickens, accepted.

Wisconsin

To Army Medical School for instructions, Lieuts. ROBERT L. MacCORMACK, Alma Center; JOHN P. HARKINS, Forest Junction.

To Camp Cody, Deming, N. M., base hospital, from Camp Cody, Capt. GERARD A. BADING, Milwaukee.

To Camp Dodge, Des Moines, Iowa, base hospital, from Fort Riley, Lieuts. ROY F. BREEDEN, Richland Center.

To Camp Laurel, Laurel, Md., for duty, from Camp Joseph E. Johnston, Lieut. LEON H. FLANCHER, Milwaukee.

To Camp Lee, Petersburg, Va., base hospital, from Camp Lee, Lieuts., CORNELIUS J. CORCORAN, Milwaukee.

To Camp Logan, Houston, Texas, for duty, from Camp MacArthur, Lieut IVAN S. PIPPAN, Excelsior.

To Camp Meade, Annapolis Junction, Md., to examine the command for mental and nervous diseases, from Camp Devens, Lieut. CHAS. C. ROWLEY, Winnebago.

To Chicago, Ill., Presbyterian Hospital, for instruction, and on completion *to his proper station*, from Camp Custer, Capt. ALBERT A. MAURER, La Crosse; from Camp Zachary Taylor, Capt. BURT EXCOTT, Berlin. On completion *to Camp Pike*, Little Rock, Ark., base hospital, Lieut. EARL L. BAUM, Milwaukee.

To Fort Riley for instruction, Caps. CARL O. HERTZMAN, Ashland, AUGUST L. C. BORCHARDT, New London; Lieuts. HERMAN M. LYNCH, Allentown; HENRY A. SINCOCK, Odanah, KNUTE A. RUETHIN, Ridgeland, LOUIS M. PEARSON, Tomahawk.

To Mount Clemens, Mich., Selfridge Field, Signal Corps Aviation School, from Mineola, Capt. EDWIN G. FESTERLING, Reedsville.

To New York City, Bellevue Hospital, for instruction, and on completion *to Camp Dix,* Wrightstown, N. J., base hospital, Lieut. EDWIN R. F. MURPHY, Antigo.

To Philadelphia, Pa., University of Pennsylvania, for instruction and investigation, and on completion to his proper station, Major ROBERT H. IVY, Milwaukee.

To Pittsburgh, Pa., for instruction, and on completion *to Camp Dix,* Wrightstown, N. J., base hospital, Lieut. THEODORE C. H. ABELMANN, Watertown. On completion to *Camp Meade,* Annapolis Junction, Md., base hospital, Lieut. MORDAHL O. GUNDERSON, Beloit.

Wyoming

To Army Medical School for instruction, Lieut. EDWARD T. GAULE, Moorcroft.

To Fort Des Moines, Ia., base hospital, from Camp Dodge, Lieut. DURWARD B. PARK, Laramie.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Meeting of Orthopedic Association.—The thirty-second annual meeting of the American Orthopedic Association was held at the Army Medical School, Washington, April 22 and 23. The meeting was decidedly a war session, as the program was composed almost entirely of papers on orthopedic subjects connected with the Army and Navy service, and the authors were, for the most part, orthopedists now in the service.

ILLINOIS

Health Insurance Commission Begins Active Work.—The health insurance commission of the state of Illinois is arranging to send to all physicians in the state a questionnaire to be used in formulating a report on this subject for the governor and legislature. The personnel of the commission is as follows: William Butterworth, employer, Deere and Company; Dr. E. B. Coolley, president, Illinois Medical Society; Edna L. Foley, superintendent, Visiting Nurses' Association; Dr. Alice Hamilton; Mary McEnerney, secretary, Bindery Women's Union, member Women's Trade Union League; John E. Ransom, superintendent, Central Free Dispensary; Matthew Woll, president, International Photo Engravers' Union; M. J. Wright, farmer; William Beye, attorney, with wide experience in compensation legislation. It is hoped that physicians will give the matter their immediate attention and return the questionnaire promptly so that the medical profession's point of view may be presented to the governor.

Chicago

Personal.—Dr. Willis O. Nance, who, at the spring election, was reelected a member of the city council for his fifth term by a plurality of more than 6,000, was again chosen chairman of the committee on public health at the meeting of the council, April 22.

Smallpox.—During the week of April 20, three cases of smallpox in one day were discovered in the general offices of one of the railroads. Some months ago, the medical directors of all the railroads were called in conference by the health commissioner and requested to make it a requirement that all employees be vaccinated. All roads but this one had complied.

Notification of Venereal Diseases.—A letter addressed to physicians in the city has been prepared and is being distributed by policemen calling attention to the ordinance of July 29, 1917, requiring the reporting of venereal diseases on penalty of a fine of from $25 to $200 for neglect or refusal to comply with the ordinance. This is done to promote the general campaign against venereal diseases now being conducted by the federal government in the interest of the Army and Navy.

LOUISIANA

Bureau of Venereal Diseases Reports.—At the meeting of the Louisiana State Medical Society, held in New Orleans recently, a complete report by the bureau of venereal diseases was made to the society. The bureau was appointed by the Louisiana State Board of Health to investigate the social diseases problem and make recommendations. The members of the bureau were Dr. Merrick W. Swords, chiarman; Dr. Henry W. E. Walther, secretary; Dr. Abe Nelken, Dr. Joseph Hume, Dr. Silas Y. Alexander, Dr. John H. Ellis, Miss Agnes Morris, and Mr. Solomon Wolff. Dr. Henry F. Ader of New Orleans has been appointed head of the bureau.

Officers Elected.—At the recent meeting of the Louisiana State Medical Society the following officers were elected to serve for the ensuing year: Dr. Wilkes H. Knolle, New Orleans, president; Dr. G. M. G. Stafford, Alexandria, first vice president; Dr. Amedee Granger, New Orleans, second vice president; Dr. Albert E. Fossier, New Orleans, third vice president; Dr. Paul T. Talbot, New Orleans, secretary-treasurer; councilors from the congressional districts, Dr. Paul J. Gelphi, New Orleans; Dr. Homer J. Dupuy, New Orleans; Dr. Beverly W. Smith, Franklin; Dr. Joseph E. Knighton, Shreveport; Dr. Jesse L. Adams, Monroe; Dr. James J. Robert, Baton Rouge; Dr. E. M. Ellis, Crowley, and Dr. E. Lee Henry, Lecompte.

MARYLAND

Measles Epidemic Spreading.—As an indication that the epidemic of measles in Baltimore has not been checked, 123 new cases were reported to the health department within twenty-four hours during the past week and 1,000 cases have been recorded in the past ten days. The disease has gained foothold because parents have failed to regard measles as anything but a trifling ailment and because the premonitory symptoms indicate nothing very serious. The health department in a note of warning has advised parents to guard healthy children from contact with those having measles. The department is also fighting whooping cough, and seventeen new cases of this disease were reported in one day.

New Officers of the Medical and Chirurgical Faculty.—At the closing session of the Medical and Chirurgical Faculty of Maryland at Osler Hall, Baltimore, the election of officers took place and resulted as follows: president, Dr. John Ruhräh; vice presidents, Drs. J. McFarland Bergland, Phillip Briscoe, Mutual, and James E. Deets; secretary, Dr. John Staige Davis, University, Va.; Treasurer, Dr. William S. Gardner; state board of medical examiners, Drs. J. McP. Scott, Hagerstown; Henry M. Fitzhugh, West Minister, and Henry T. Collenburg. After the election, a scientific meeting on end-to-end suturing of the intestine, personal hygiene and pneumonia in the army camps was held, followed by a clinic at the Johns Hopkins Hospital in the afternoon.

Personal.—Lieut.-Col. Thomas B. Futcher of the Johns Hopkins Hospital, has just returned to Baltimore from England, where he has been in charge of the medical division of the Canadian Expeditionary Hospital for the past eight months.——The faculty of physics of the University of Maryland School of Medicine and College of Physicians and Surgeons has elected Dr. Charles L. Summers, Winston-Salem, N. C., professor of clinical pediatrics and visiting pediatrician to the university hospital. Dr. Summers has already entered on his new duties.——Capt. Henry W. Kennard, M. R. C., who has been for the past five years in the Philippines, has returned to Baltimore for a short time. ——Capt. Hugh W. Brent, formerly of the staff of the university hospital, has arrived in France, where he is inspecting hospitals established for the American Expeditionary Force and will join the university hospital unit on its arrival in France. Captain Brent was connected with the Camp Meade Base Hospital before sailing.

MASSACHUSETTS

Tuberculosis Bill Fails.—In the legislature, April 18, the bill providing that careless and incorrigible tuberculous persons, who fail to observe the rules for the control of such patients, may be committed to institutions for treatment, failed by a vote of 72 to 30.

Personal.—Dr. George G. Sears, Boston, has been appointed by the mayor trustee of the Boston City Hospital.——Dr. Vernon C. Stewart, Woburn, has been named by the governor as medical examiner of Middlesex County.——Dr. Charles B. Frothingham, Lynn, has been made a trustee of the Boston State Hospital in place of Dr. John F. Fennessey, whose term has expired.

Cutter Lectures.—April 25 and 26, at the Harvard Medical School, Frederick S. Lee, A.M., Ph.D., professor of physiology in the College of Physicians and Surgeons, Columbia University, New York, delivered the 1918 Cutter lectures, his subject being "Industrial Efficiency and the War." These lectures are given annually on some subject in preventive medicine, under the terms of a bequest from the late John

Clarence Cutter of Boston, and are free to the medical profession and the press.

MINNESOTA

Major Jump to Recruit Physicians.—Major H. D. Jump, M. R. C., U. S. Army, will address the physicians of Minnesota, their wives, families and friends, in the Radisson Hotel, Minneapolis, May 18. Major Jump will speak on the needs of the government for 5,000 additional men for the Medical Reserve Corps of the Army, and for 2,000 for the Medical Department of the Navy. It is the earnest request of the Surgeon-General that all physicians under 55 years of age register themselves as ready for service. There will be a commissioned officer from the government present at this meeting in Minneapolis to examine all applicants for commissions. It is hoped that as many of the physicians of the state as possible will attend this meeting. It will be a patriotic meeting with prominent speakers present.

Minneapolis Clinic Week.—The clinic held in the twin cities, April 8 to 12, as already announced, was organized by the clinical section of the Hennepin County Medical Society. Various committees were appointed to carry on the work. In preparation for the session, the entire northwest states of Minnesota, North and South Dakota, Montana and the western section of Wisconsin were thoroughly circularized. During the session week, a daily bulletin was issued giving full advices as to all clinics. Nearly 300 physicians outside the twin cities registered. There were 158 clinicians and the clinics were held at fourteen different hospitals.

Special clinics in all the departments of internal medicine were given and clinics were held by the various specialists. In the afternoon there was a general session at the Radisson Hotel, where moving picture films were shown, and demonstrations were given, especially lantern slide demonstrations and such other material as could be presented without a didactic lecture.

MISSISSIPPI

Health Officer Discharged.—It is reported that the executive committee of the state board of health, April 6, summarily discharged Dr. Rockwell E. Smith, health officer of Smith County, recently charged by the military authorities as having accepted money to grant exemption certificates to selective service registrants.

Sanatorium Committee.—The following is the sanatorium committee of the state board of health: chairman ex-officio, Dr. C. D. Mitchell, president of the board, Jackson; secretary ex-officio, Dr. Waller Leathers, Jackson; Drs. Thomas H. Seay, Laurel; Harvey F. Garrison, Seminary; J. Harvey McNeill, Olive Branch, and Willie H. Watson, Brandon.

MISSOURI

Physician Wins Suit.—In the suit for $16,500 damages brought by Miss Juliette Wurst against Dr. Remy J. Stoffel, wherein it was charged that the defendant had torn off the hat of the plaintiff, jerked her to her feet, and pulled her hair when she failed to stand during the playings of the "Star-Spangled Banner," April 4, the jury, after a short deliberation, rendered a verdict in favor of the physician.

Personal.—Dr. George P. Pipkin, formerly superintendent of the Kansas City General Hospital and health commissioner of the city, who was obliged to go to New Mexico a year ago on account of a physical breakdown, has returned recovered.——Dr. Max C. Starkloff, health commissioner of St. Louis, has been seriously ill with influenza.——Dr. Thomas T. Sawyer has succeeded Dr. Joseph B. Cowherd, who resigned as physician-in-charge of the eye, ear, nose and throat work of the school hygiene staff of Kansas City.

MONTANA

New Hospital.—Ground was broken for the new Deaconess Hospital at Billings, March 15.

Override Antivaccination Protests.—At a meeting of the state board of health in Helena, April 6, it was decided, despite protests from Butte, to adhere to the board's policy of compulsory vaccination. Laurel was added to the list of towns that have been ordered to vaccinate all their schoolchildren at once.

Antituberculosis Work.—The field secretary of the state society for the study of prevention of tuberculosis has organized a public health society for Cascade County, and is organizing a similar society in Lewis and Clark County. The purpose of these organizations is to promote the study and prevention of tuberculosis, the establishment of tuberculosis sanatoriums and the opening of free tuberculosis clinics.

NEBRASKA

Dinner for Base Hospital Staff.—Dr. and Mrs. August F. Jonas, Omaha, gave a dinner, March 20, to members of the committee of physicians who organized the University of Nebraska Base Hospital Unit No. 49, which has been ordered to mobilize. The guests of honor were Major Arthur C. Stokes, director, and Major Charles A. Hull, chief of the surgical service of the unit.

Hospital Contract Awarded.—The contract for the erection of a new hospital building at the state industrial school for boys, Kearney, has been awarded to Ernest Rokahr, Lincoln, for $22,465. The building will be paid for out of the cash fund of the institution, which has been accumulated by the sale of products raised by the inmates on the farm connected with the institution.

NEW JERSEY

Medical Group Elects New Officers.—The medical group of the Trenton Chamber of Commerce met, April 1, and elected Dr. Ira C. Leedom, chairman, and Drs. Walter T. Madden, and E. Ginmelley, vice chairmen.

Personal.—Dr. C. Hewson Canning, Atlantic City, fell three stories through an elevator shaft, March 23, fracturing his skull and sustaining other serious injuries.——Dr. H. L. Goddard, Vineland, has been appointed head of the bureau of juvenile research under the Ohio State Board of Administration, with headquarters in Columbus.

NEW MEXICO

Ban on Legalized Vice.—At a conference held at Santa Fe, March 29, by Dr. James A. Massie, president of the state board of health, Assistant Attorney-General Hatch, and Lieut. Paul Papenoe, representing the Surgeon-General of the United States Army, stringent measures were adopted to prevent the spread of venereal disease. It was decided that licensed houses of ill fame be abolished after April 15, and the reporting of venereal disease was made compulsory. The governor has agreed to provide $3,500 to put these regulations into effect until the legislature convenes.

NEW YORK

State Closes Brooklyn Hospital.—At a special meeting of the state board of charities, held April 25, orders were issued closing the old Williamsburg Hospital, at Bedford Avenue and Third Street, in the Williamsburg section of Brooklyn. This order was prompted by the dangerous and unsanitary condition of the antiquated building. The institution was recently merged with the Eastern District Hospital to which institution many of the patients, following the order to close the Williamsburg Hospital, were removed.

Extension of Tuberculosis Work.—The details of a movement to aid local health authorities in dealing with tuberculosis growing out of the war conditions have been announced by the tuberculosis committee of the New York State Charities Aid Association. Two physicians, Dr. Elliott Washburn, former superintendent of the state tuberculosis sanitarium at Rutland, Mass., and Dr. Charles S. Prest of the New York State Department of Health, have been placed at the disposal of authorities throughout the state to aid in establishing dispensaries and providing medical oversight and supervision for tuberculous patients. It is estimated that the draft has revealed 22,000 cases of tuberculosis, in the great majority of which the patients must remain at home and be cared for. These cases serve to emphasize the need for a vigorous renewal of antituberculosis work.

New York City

City Hospitals Taken for Army.—After a conference between Mayor Hylan and representatives of the federal government, announcement is made that the government will take over the Sea View Hospital, on Staten Island, and the Otisville Sanitorium, at Otisville, N. Y. These institutions will be operated jointly by the federal government and the city officials. The government is planning to expend about $450,000 in additional wards and beds.

Government Designates Hotels for Nurses.—Ten New York hotels owned and managed by the Knott Brothers have been designated by the government for the care of Red Cross nurses during their stay in New York when they have been assembled for transportation. These hotels have been selected

because of their convenience to steamship piers and because some of them have been designated for use as base hospitals and replacement stations.

Annex for Flower Hospital.—Flower Hospital celebrated April 21 as Loyalty Day. At the exercises on this occasion, Dr. Royal S. Copeland, president of the hospital, announced the gift of a completely furnished 300-bed annex to the hospital, by Charles M. Warner, president of the Warner Sugar Refining Company. A six-story building immediately adjoining the hospital building has been acquired for this purpose. This annex is to be used in caring for soldiers and sailors and will be ready for occupancy by August 1.

Meningitis Expert Goes to China.—Lieut. Peter K. Olitsky, Medical Corps, U. S. Army, and of the scientific staff of the Rockefeller Institute for Medical Research, on permission granted him by the Surgeon-General, sailed from Vancouver, April 11, for China, in response to a cabled request received by the institute from the colonial secretary at Hong Kong for assistance in a local outbreak of epidemic meningitis. Dr. Olitsky is to advise the Hong Kong government concerning the control of the disease, especially in the preparation of an effective serum and the institution of other therapeutic and prophylactic measures.

Clinical Facilities for Cruiser and Transport Force.—Through the mayor's committee on national defense, the commander of the Cruiser and Transport Force, United States Atlantic Fleet, has sought and obtained access to the clinics and hospitals of greater New York for the professional experience of medical officers of the cruisers and naval transports. A number of the hospitals of the city have announced hours at which clinics are held. The Society for the Advancement of Clinical Study in the New York Bureau of Clinical Information, New York Academy of Medicine, 17 West Forth-Third Street, is prepared to give daily information of operations, hours and operators at the various hospitals throughout the greater city.

Protest Against Reorganization of Health Department.—Protests against the abolition of certain bureaus in the New York Health Department that have been shown to be essential to effective public health work continue to pour in from many quarters. Among those who have written letters to Mayor Hylan are Dr. William H. Welch, president of the Maryland State Board of Health and director of the school of hygiene and public health at Johns Hopkins University; Dr. William A. Evans, former commissioner of health of Chicago; Dr. Charles J. C. O. Hastings of Toronto, Canada, president of the American Public Health Association; Peter H. Bryce, chief medical officer, Department of Interior, Ottawa, Canada; Charles E. A. Winslow, professor of public health at the Yale University Medical School; Dr. Charles V. Chapin, superintendent of public health of Providence, R. I., and many others prominent in public health work. The protest against the proposal to abolish the bureau of public health education is especially emphasized by these authorities on public health matters. The Surgeon-General's Office has entered a protest and there has been a rumor afloat that the government would interfere if the efficient heads of bureaus were removed and inferior or untrained men and women employed. Surgeon-General Blue, in his letter says, "In the larger centers and industrial communities, health problems in their relation to industries have never constituted a more important consideration than in these days when increased production along many lines is absolutely essential. The conservation of health not only among the fighting forces, but in the entire civil population as well, is a war time problem of greatest moment. The day has passed when inferior men can do the work, and skilled men in sanitation and public health science are necessary." A statement issued, April 26, by James E. McBride of the municipal civil service commission contains recommendations made by Dr. S. Josephine Baker for the reorganization of her bureau along more economical lines, whereby she proposes a saving of $105,000. The abolition of the district offices in the borough of Queens is recommended on the ground that the work in that borough was carried on effectively before those offices were established. Other economies, the recommendations state, could be effected by a reorganization of the nursing service and a reduction in the clerical work done by nurses, and part time inspectors could be required to work three and one-half hours a day instead of three hours.

OKLAHOMA

Tuberculosis Survey.—April 1, the Oklahoma Association for the Prevention of Tuberculosis began a series of public health surveys in the larger towns of the state to secure reliable data concerning communicable diseases, particularly tuberculosis. The towns to be included in the survey are Oklahoma City, Tulsa, Muskogee, Enid, Shawnee, Bartlesville, Ardmore, Chickasha and McAlester. It was found last fall that the association was much handicapped in its work by the lack of information concerning health matters, hence these surveys were instituted. The information obtained by the surveys will permit of the inauguration of satisfactory measures for safeguarding the public health and a more comprehensive program with relation to tuberculosis. The surveys are in charge of M. P. Horowitz, of the department of biology and public health, Massachusetts Institute of Technology, and Dr. Gayfree Ellison, Norman, professor of bacteriology and hygiene of the University of Oklahoma, assisted by members of the executive and nursing staff of the state tuberculosis association, as well as by the staff of the state board of health and the board of agriculture. The surveys will be continued all summer and to the end of September.

PENNSYLVANIA

Personal.—Dr. Samuel P. Longstreet has been appointed director of the Scranton Health Department.——Dr. Roger P. Batchelor has been appointed superintendent of the Palmerton Hospital, succeeding the late Dr. John W. Luther.——Dr. Walter W. Seibert of Easton has been elected president of the Lehigh Valley Homeopathic Medical Society.——Dr. Florence L. Marsh of Mount Pleasant celebrated her fiftieth year in the practice of medicine, having graduated from Jefferson Medical College in 1868.

Philadelphia

Naval Hospital Provided.—In the program to build fifteen temporary naval hospitals approved by the house of representatives, two will be located in Philadelphia, one of them being on League Island.

Fund to Fight Mosquitoes.—The state department of health has been granted $75,000 by the state commission of the National Council of Defense to fight mosquitoes in the vicinity of Hog Island and League Island.

Public Health Day.—Wednesday, May 1, Public Health Day was celebrated by a great public health meeting at the academy of music. Dr. William W. Keen presided and addresses were made by former President W. H. Taft, Dr. Alice Weld Aallant, Dr. James M. Anders and Dr. Wilmer Krusen, chief of the department of public health and charities. This meeting was under the auspices of the College of Physicians, the county medical society, the Child Federation, the Pennsylvania Society for the Prevention of Tuberculosis, the City Club, the board of education, the board of recreation and the city health department.

Personal.—Dr. Ross B. Cobb has been appointed a city physician in the bureau of charities at a salary of $720 a year.——Dr. Ida L. Dunmoyer has been made assistant physician in the bureau of charities at a salary of $1,000 a year, and Dr. Alma H. Hinman has been appointed clinical physician in the bureau of charities at a salary of $900.——Dr. Samuel McClintock Hamill addressed the committee conference at its annual meeting at the City Club, Monday, April 22, on "What Philadelphia Can Do and the Duty of the City in Child-Saving."——Dr. H. Augustus Wilson has resigned the chair of orthopedic surgery in the Jefferson Medical College. Dr. Henry W. Stelwagon has resigned from the chair of dermatology in Jefferson Medical College. Both resignations are to take effect at the close of the present college year.——Dr. George A. Meeker has been appointed dean of the postgraduate school of the University of Pennsylvania.——Dr. Paul J. Pontius was elected a member of the board of directors of the Philadelphia County Medical Society, to fill the unexpired term of Dr. J. Norman Henry, resigned.

RHODE ISLAND

Relief Plans Outlined.—At a meeting of the Rhode Island Medical Society in Providence, March 20, Dr. N. Darrell Harvey, after giving an account of the work of the Rhode Island Red Cross Relief Unit, Halifax, N. S., last December, detailed the proposed plans for effective emergency relief work, which could be given Providence in the event of a similar disaster. The city is divided into eight precincts, in each of which two physicians are assigned to duty. Provision is made for keeping records of all patients treated, and for a house-to-house canvass by social service workers and nurses. The available amount of medical and surgical sup-

plies is ascertained and also the amount to be obtained from the department stores for relief work. Nurses, physicians, stretcher bearers, and orderlies have been enrolled, and automobile trucks and buildings suitable for hospital purposes have been secured.

SOUTH CAROLINA

County Tuberculosis Camp.—The work preliminary to the establishment of Camp Alice, Sumter County Tuberculosis Camp, which was made possible by Mr. H. J. Harby's donation of $10,000 in cash and a site for the institution, has been practically completed. The work of construction will be begun as soon as the site can be cleared.

Personal.—Dr. Skottowe B. Fishburne, city health officer of Columbia, has sent in his resignation, which took effect, May 1. Dr. R. T. Jennings has received a temporary appointment as his successor.——Dr. Baxter Haynes, Spartanburg, has entered on his duties as health officer of Spartanburg County.——Dr. Charles E. Low, Spartanburg, formerly health officer of Spartanburg County, has resigned to accept the position of director of health in Wilmington, N. C.

CANADA

University News.—About sixty young doctors just graduated from the University of Toronto will join the Canadian Army Medical Corps within the next month. Many of the third and fourth year men have already offered themselves for service on destroyers and elsewhere.——Queen's medical faculty are making preparations with regard to the new military service regulations. Men liable for service under the act are being placed in the C. A. M. C. for service in Canada, and will be allowed to continue their studies next fall if conditions permit. A summer session will likely be held to provide for fourth-year men graduating in the fall.——It is reported that the students of Laval University, Montreal, are joining the colors in large numbers.

Cod Liver Oil.—According to *Commerce Reports*, large quantities of cod liver oil are produced in Newfoundland as a by-product of the fishing industry. The quality of the oil heretofore however, has been said to be inferior to that prepared in Norway. In 1910, the government procured an expert from Norway and a law was passed in 1916 requiring refiners of cod liver oil to take out licenses. The product has been much improved and it is said oil as good as that produced in Norway is now obtainable from Newfoundland. The production of refined oil has increased considerably in the past few years. In 1913-1914, the amount of refined oil exported was 26,218 gallons, in 1914-1915 it was 47,170 gallons, and in 1915-1916 it was 142,637 gallons. The amount of common oil exported during those years was in excess of a million gallons a year, and a greater output of refined oil only awaits a market.

Saskatchewan Medical Legislation.—It has been decided in the province of Saskatchewan to place the medical men under their own act, the medical profession act, and the irregular practitioners under the act respecting drugless healers. Under the latter, the commissioner of public health shall admit on the register of drugless practitioners and issue licenses to every person registered under the osteopathic act at the time this act comes into force, whose fees at such time are fully paid. Such persons shall not be restricted in the practice of their profession to a greater degree than they are restricted by the osteopathic act. The commissioner of public health shall also admit any person who has been certified to by the registrar of the University of Saskatchewan as having satisfactorily passed the examination for drugless practitioners and who produces satisfactory evidence of his identity as being the person certified, as well as evidence that he is 21 years of age, and is of good character, provided that such person shall be restricted to the practice of the method of treatment cited in his license. A drugless practitioner may use words or symbols to designate his calling, and may use the title, "doctor" or "physician," provided it is used in connection with words indicating that he is a drugless practitioner, or he may adopt the title "manipulative surgeon." Otherwise, he shall not use the letters "M.D.," or the prefix "Dr.," or the term "doctor" or "physician" or "surgeon," or the words "Doctor of Medicine," or "physician and surgeon" in connection with his name, nor shall he by advertisement, announcement or otherwise represent himself as a physician or surgeon.

Personal.—Lieut.-Col. James J. Fraser, D. S. O., Walkerton, Ont., has returned to Canada on leave from overseas service. Colonel Fraser went over as a captain, but has since gained his promotion, and also D. S. O., having been mentioned in despatches three times.——Major George F. Boyer, Toronto, who has been overseas with the University of Toronto Base Hospital, has returned. He served at Saloniki and later at Shorncliffe, Ramsgate and Buxton.——Dr. O. R. Avison, president of the Severance Union Medical College at Seoul, Korea, is on a visit to Toronto. Before going to Korea twenty-five years ago, Dr. Avison practiced in Toronto.——Major Alexander Mackay, Toronto, who has been overseas at the Ontario Military Hospital, Orpington, England, has been appointed inspector of prisons and hospitals for the insane and other charitable institutions in Ontario, succeeding the late Robert W. Bruce Smith.——It is understood that Capts. Frank S. Park and Walter R. W. Haight, Toronto, who were taken prisoners by the enemy at Zillebeke in 1916, have been released in a recent exchange of prisoners.——It is announced that Dr. Alfred Thompson, Dawson, elected a member of parliament for the Yukon, will resign his position as medical superintendent of the hospital for returned invalided soldiers.——Col. William B. Hendry, Toronto, who has been consulting with the University of Toronto authorities as to the university base hospital in England, has returned overseas.——Col. James A. Roberts, Toronto, who went overseas three years ago in command of the University of Toronto Base Hospital, has recently been appointed assistant medical director of services in London, England.——Capt. George Ewart Wilson, Toronto, who served overseas nearly three years with the University of Toronto Base Hospital, is now in Toronto, and has been appointed to the military section of the Toronto General Hospital, under Col. Alexander Primrose.——Dr. Clarence M. Hincks, Toronto, has been appointed secretary and assistant medical director of the Canadian National Committee for Mental Hygiene, a new organization just formed in Ottawa.——Dr. Agatha Doherty, Toronto, is junior surgeon on the staff under Dr. Aldrich Blake of the hospital for women, London, England. Dr. Doherty is also lecturing at the Queen Charlotte Hospital, and is connected with the Women's Compensation Board for the Marleybone district.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

An addition to the Good Shepherd Hospital, Syracuse, N. Y., for the care of wounded American soldiers, and two scholarships in the Harvard Medical School, by the will of Mrs. Elizabeth C. Farnham of New York City.

Sanitary Conference.—A conference of health and sanitation experts of the South was held at Birmingham, Ala., March 25 and 26, under the presidency of Dr. Watson S. Rankin, Raleigh, N. C. The principal subjects discussed were soil pollution and its prevention, the diseases arising from soil pollution, including typhoid fever, dysentery, and hookworm disease, and compulsory sanitary ordinances.

For Poliomyelitis Work in South Africa.—At the request of the South African Institute for Medical Research, the Rockefeller Institute for Medical Research has arranged with the Vermont State Department of Health to release Dr. Edward Taylor for temporary service in Johannesburg, in order that he may advise the government there in respect to an epidemic of poliomyelitis prevailing in that region. Dr. Taylor sailed from New York, April 20.

Eighth Pan-American Medical Congress to Meet at Buenos Aires.—The official notice has been received by the authorities of Argentina from the permanent international committee that, according to the unanimous vote at the seventh congress, held at San Francisco, the next meeting will convene at Buenos Aires. The Academia de Medicina has been empowered to appoint the committee of organization for the celebration of the congress, the Eighth Pan-American Medical Congress, in 1919.

District Association Meeting.—The spring meeting of the Iowa and Illinois Central District Medical Association was held at Rock Island, Ill., April 11. After the presentation of clinical cases, Dr. Henry Albert, Iowa City, Iowa, gave an illustrated talk on "Animal Parasitic Infections Increased by War Conditions." Dr. Clifford U. Collins, Peoria, Ill., presented a paper on "Parotitis as a Postoperative Complication," illustrated by lantern slides, and Dr. David S. Fairchild, Clinton, Iowa, gave some reflections on medical economics.

National Tuberculosis Association Meeting.—In the *Bulletin* of the National Tuberculosis Association for April, it is announced that the name of the National Association for the Study and Prevention of Tuberculosis has been changed to

the National Tuberculosis Association. The fourteenth annual meeting of the organization will be held in Boston, June 6, 7 and 8, 1918. The Copley-Plaza Hotel will be the place of meeting, and on the evening of the first day there will be a meeting of the American Sanatorium Association. The preliminary program is being sent out from the executive offices, 105 East Twenty-Second Street, New York. The new address of the association is 381 Fourth Avenue, New York. The association has recently been incorporated. A committee on federal legislation has been appointed, and also a committee of five clinicians to act for the association in cooperation with the military and naval authorities in government plans for caring for soldiers and sailors suffering from tuberculosis.

Prevention of Blindness.—The third annual report of the National Committee for the Prevention of Blindness, covering the calendar year 1917, shows that, in the thirty-one state schools for the blind in the United States, there was a total of 2,961 pupils blind from ophthalmia neonatorum. In addition, there were 375 pupils in classes for the blind in public schools, making a total of 3,336 pupils blind from this cause. Three states, Delaware, Minnesota and North Carolina, were added to the list of states having laws for the prevention of ophthalmia neonatorum. During the year, the committee undertook more active work in the prevention of eye injuries in the industries, of which there were about 200,000 among the two million nonfatal accidents in industrial occupations, or 10 per cent. of the total. Approximately 15,000 persons in the United States are blind as the result of industrial injury. The committee has carried on its campaign of education in prevention by lectures, exhibits, and publications of various sorts, as well as by personal work of the officers and others of the committee. During the fifteen months from October, 1916, to the end of December, 1917, the expenditures of the committee were $22,375, and there was a balance of $6,543.03 on hand to begin the work of the new year.

FOREIGN

Medical School in French African Colony.—Provisions have been made for a medical school at Dakak in French West Africa. The aim is to train native practitioners and midwives.

Price of Paper in France.—The *Paris Médical* cites a recent official publication which mentions that while paper in the second quarter of 1914 cost 27 francs, in 1915 the same amount cost 31.2; in 1916, 55.65; in 1917, 81, and in January, 1918, 145, with a jump to 160 the following month.

Deaths in the Profession Abroad.—H. Mallet, professor of pediatrics at the University of Geneva, aged 43.——**P. M. C. B'arez,** professor of chemistry at the University of Bordeaux and author of over 200 works on pure and applied chemistry, aged 66.——**E. T. Speyr,** a leading Swiss ophthalmologist, and writer on his specialty, aged 50.——the *Nederlandsch Tijdschrift* mentions the death of **O. von Sicherer,** professor of ophthalmology at the university of Munich, and of Prof. **A. Wossidlo,** a urologist of Berlin, aged 63.

CENTRAL AND SOUTH AMERICA

Lepers Escape from Colony.—On account of dissatisfaction with the food furnished them, 300 lepers segregated in the colony at Agua de Dios near Bogota, Colombia, escaped from their keepers, and scattered to various parts of the Sanlander district.

Porto Rico's Roll of Honor.—The *Boletin de la Asociacion Medica* gives the names of fourteen physicians who have responded to the call of the Surgeon-General and joined the Medical Corps of the American Army. Some have given up a good practice or remunerative position. Those from San Juan are Drs. Laugier, Font, Lippitt, Igaravidez, Glines, Casellas and Ferrer; from elsewhere in the island, Drs. Benitez, De Quevedo, Caparro, Mejias, Janer and Crescioni.

Semicentennial of Bahia Medical Journal.—The *Gazeta Medica da Bahia* celebrates its fiftieth anniversary by issuing a special number of 364 pages. Bahia is on the seacoast of northern Brazil and its university dates from 1808. Among the collaborators on the *Gazeta* are Profs. P. Pereira, C. Fraga, C. de Andrade, and Drs. O. Torres, A. de Britto and O. Freire—all authorities on various phases of tropical medicine. This special number contains reviews of the incidence of beriberi, malaria, trachoma, and tropical and general diseases at Bahia during the last half century.

Leprosy in Porto Rico.—Dr. J. A. Diaz presents in the Journal issued by the Porto Rico Medical Association the report of a committee appointed to investigate conditions in regard to leprosy in Porto Rico. The committee visited Cabras Island, which is set apart for the leper colony. The island is so sandy and rocky that there is no chance to raise vegetables or flowers. The colony consists of fifteen leper women and twenty-six leper men, with two servants and a resident practitioner. The only drinking water available is rain water, with a central arrangement for collecting it. The passage by small boats to the island is a dangerous one. Several persons have been drowned trying to make the trip, including one government employee. The committee recommends removing the leper colony from Cabras Island to some remote but fertile portion of the mainland of Porto Rico, and applying to the care and treatment of the lepers the principles of a modern sanatorium for tuberculosis, instead of leaving them in this hopeless isolation.

CORRECTIONS

Disloyalty Charge.—In The Journal, April 27, under medical news, Indiana, appeared an item concerning the retirement of Dr. Frederick W. Krueger from the Wayne County conscription board. Dr. Krueger writes that this statement is incorrect as he tendered his resignation to the board on account of local conditions, and that the resignation was accepted with sincere regret by Governor James P. Goodrich, who has expressed his absolute confidence in Dr. Krueger's loyalty.

Canadian Students Continue Studies.—In The Journal, April 13, under medical news, Canada, it is stated that the fifth year medical students of McGill University will dispense with their vacation and study until autumn in order to be able to go overseas with the Canadian Army Medical Corps. The registrar of this school writes that this item is incorrect as special courses of this nature are conducted only at the urgent request of the military authorities, who up to this time have made no request for such a course this year.

Death of Medical Officer.—In The Journal, April 27, 1918, a picture and a notice of the death in the service in France of Lieut. Julian Neal Dow, M. R. C., of Arcola, Ill., appeared. His parents reside at Neoga, Ill., and the information of his death came from apparently official sources, his parents furnishing the photograph on our request. The report of his death was an error, according to the Chicago *Tribune*, of the same date, April 27, which says that a cablegram was received stating that Lieutenant Dow was wounded, but not killed, and is now a prisoner in Germany.

PARIS LETTER

Paris, March 28, 1918.

The Antiseptic Power of Vincent's Boric Acid-Hypochlorite Mixture

Dr. Bazin demonstrated recently at the Society of Biology the results of comparative studies between the antiseptic power of the boric acid-hypochlorite mixture and that of the tincture of iodin and of iodoform. The first researches in vitro have shown that to inhibit the development of bacteria in a given bouillon culture required the use of 3 gm. of Vincent's mixture, while to check the cultures in the same bouillon, 10 gm. of tincture of iodin and 25 gm. of iodoform were required. To study the comparative toxicity of the several products, Bazin introduced them into the peritoneal cavity of guinea-pigs. Swabbing this cavity with tincture of iodin, or the introduction into its interior of a weak dose of iodoform, caused the death of the animal, while the mixture of Vincent caused only a slight reaction. In cutaneous wounds and other superficial wounds suppurating after infection with dirt, the tincture of iodin and Vincent's mixture seemed to have equal power; in muscular wounds soiled with dirt the mixture of Vincent showed a notable superiority. In wounds of the bones, the mixture showed great superiority over the tincture of iodin. As to iodoform, it showed always a very notable inferiority.

Antityphoid and Paratyphoid Vaccination of Native Troops from New Caledonia

At the last meeting of the Académie de Médecine, Drs. Guy Laroche and Mazet stated that the contingents of the black race had not been subjected as yet to antityphoid vaccination because of the infrequency of typhoid among the adults of these people; hence they feared that the reaction would be too severe. Nevertheless, last year they had occasion to vaccinate a contingent of Canaques following an epidemic of typhoid, which, in the same battalion, did not attack the vaccinated whites but only the unvaccinated

Canaques. Two inoculations of 1 and 2 c.c. were made with an eight day interval. The vaccine used was the heated vaccine of the typhoid and paratyphoid bacilli. (New Caledonia in the Southern Pacific belongs to France.) Only slight reactions occurred, although the Canaques presented the majority of the conditions in the presence of which we hesitate to vaccinate: malaria, dysentery, filariasis, etc. Not only were there no accidents, but in the majority of cases the injections were tolerated better than they are by the Europeans. The lesser intensity of the reaction was probably due to the fact that the nervous system of the black races is much more calm than that of the white race. This observation proves that in the presence of analogous cases among colored people, there is no need to hesitate to practice antityphoid and paratyphoid vaccination.

Medical Students Serving in the Navy

The minister of marine has decreed that medical students serving in the marine in the capacity of seaman nurses and *titulaires* of one, two or three inscriptions, who have not been able to enter the preparatory school of medicine at Bordeaux because of their service with the colors, which has prevented them from completing their medical course, are to be sent to Bordeaux to pursue the prescribed complementary course at the preparatory school of medicine under officers of the corps de santé de la marine.

American Aid

The president of the republic recently received Mr. Henry P. Davison, president of the war committee of the American Red Cross, accompanied by Major Perkins, secretary-general, who had been presented by Mr. Sharp, the United States ambassador. The president extended to Mr. Davison his heartiest thanks and warmest felicitations for the valuable assistance rendered by the American Red Cross to the allied armies and particularly to France. He added that he had witnessed again at the Courneuve the great services rendered to the victims of the recent catastrophe.

Mr. Davison, at the hotel Ritz, had previously received the representatives of the Paris press. After explaining the nature of the American Red Cross, he detailed the enormous development of that institution since its reorganization a year ago. The membership has increased from 200,000 to 23,000,000, with 75,000 local chapters throughout the United States. Mr. Davison outlined the work undertaken by the American Red Cross in Europe, and insisted that it was not a work of charity, but of love and affection. In order to realize the materialization of the plans outlined, a new public subscription would be launched in the United States next May, and it is estimated that as large a fund at least, if not larger, will be secured as was obtained by the same means last year, over 500,000,000 francs.

Mr. Davison has left for the American front. He will visit some of the Red Cross centers in France and then he will proceed to Italy.

Interallied Food Conference

A scientific interallied food conference of professors from the French medical schools, and English, American, Italian and French experts, convened, March 25, at the Faculté de Médecine de Paris under the presidency of M. Victor Boret, minister of agriculture and food commissioner. In his opening address the minister outlined the object of the conference, namely, to study the conditions permitting of making the best use possible of the limited resources at the disposal of the Allies, sustenance not only for man but also for animals. The chemical composition of foods and their equivalents will serve as a basis for this work. Following the minister's remarks, the delegates outlined the program for their work, and set to work at once.

Institution of a Fund for Social Study

Two Americans, Miss Eleanor Chalfant and Mrs. Walter S. Mitchell, have donated the sum of 5,000 francs as a fund to be given to some French woman who has distinguished herself in social service work, enabling her to take a trip to the United States in order to gather information at first hand. Dr. Charles White of the American Red Cross has been entrusted with the carrying out of this plan, which will be supervised by a committee of patronage including Professor Letulle, member of the Academy of Medicine, and Senator Léon Bourgeois, president of the Alliance for Social Hygiene.

Death of Dr. Camille Sauvage

Dr. Camille Sauvage, aged 44, professeur agrégé de la Faculté de médecine de Paris and accoucheur des hôpitaux, is dead. Since the first day of mobilization he has been on active duty in the zone des armées, first in charge of an ambulance and then of a large hospital. He was active for two and a half years; then worn out by fatigue he was forced to take to his bed. After a lengthy convalescence, he reported for service again, but just then he became ill again and died. Sauvage was the author of a number of important publications. Of special note are those on rupture of the uterus and on syphilis and its bearing on reproduction.

BUENOS AIRES LETTER

BUENOS AIRES, March 24, 1918.

Infant Mortality in Buenos Aires

According to statistics published recently by Dr. E. R. Coni, the infant death rate during the ten years ending with 1907 was 31.1 per cent. of the total mortality. In the decade following, ending with 1917, the proportion was 36.4 per cent. By infant mortality he means the deaths of children less than 2 years old. The Argentine Sociedad de Pediatria is to discuss this increasing infantile death rate at its next meetings.

Bibliographic Index of Medical Works in Argentina

The Circulo Medico of Rosario issued last year an alphabetical index of all the medical works published in Argentina up to the end of 1916.

Tuberculosis Death Rate at Cordoba

The mortality from tuberculosis in this large city of northern Argentina has shown a progressive increase in recent years, having risen from 30 per ten thousand inhabitants in 1897 to 43.8 in 1916. The Cordoba province is sought by the tuberculous elsewhere on account of its climate, but at the same time there is an increase among the older residents.

Pituitary Body and Polyuria

In a recent publication, Drs. Houssay and Romaña assert that the so-called pituitary polyuria is dependent on lesions of a zone in the cortex adjoining the pituitary, and extending from the pons to the chiasm. They witnessed the development of polyuria in young dogs after complete removal of the pituitary. This zone in the brain seems to be responsible for the polyuria, but it is impossible to say whether the posterior lobe is or is not included in this zone.

Venereal Granuloma

Considerable research has been done on venereal granuloma in South America, particularly in Brazil. It is comparatively rare in Argentina. Roffo with some of his co-workers (Nin Posadas, Ghiso, Zarate, Farini and Zerbini) have described several cases, curing them all completely by the Viana method of treatment, namely, intravenous injections of a 1 per cent. solution of tartar emetic, sterilized by filtration.

Marriages

LIEUT. FREDERICK EFNER WRIGHTMAN, M. R. C., U. S. Army, Sabetha, Kan., to Miss Rosina Tinsley of Wilkes-Barre, Pa., at Washington, D. C., recently.

GEORGE EUGENE DODGE, Tucson, Ariz., formerly of New York, to Mrs. Mabel R. Kerrigan of Tucson, Ariz., April 9.

LIEUT. GERALD SPENCER SHIRLEY, M. R. C., U. S. Army, New York, to Miss Florence Isabel Miller, recently.

CHARLES BERNARD PRITCHETT, Danville, Va., to Miss Shepherd Leak, Wadesboro, N. C., April 17.

JAMES ALFRED FISHER, Clayton, N. J., to Miss Janet Ackerman of Ashbury Park, N. J., April 9.

HAYNES JORDAN FREELAND, Rocky Ford, Colo., to Miss Mary Osgood Parker of Indianapolis, April 9.

JOHN CONGER BRYAN, New York, to Mrs. Margaret A. A. Rumsey, at Trenton, N. J., March 28.

RUFFIN ALEXANDER PAINE, Denver, Colo.; to Miss Imogene Norris, New Orleans, La., April 17.

COLIN LUKE BEGG, New York City, to Miss Susanne Confere of New Orleans, April 10.

VOYLE ABRAMS PAUL to Miss Ada G. Stark, both of Stamford, Conn., March 28.

Deaths

Ephraim Fletcher Ingals, Chicago, died at his home on April 30 from angina pectoris. Dr. Ingals was born in Lee Center, Ill., Sept. 29, 1848, and graduated from Rush Medical College in 1871. He was a nephew of Ephraim Ingals, for many years professor of materia medica and therapeutics in Rush Medical College, and it was under the tutelage of his distinguished uncle that Dr. E. F. Ingals took up the study of medicine. In 1871, after his graduation, Dr. Ingals became assistant professor in materia medica from 1871 to 1873; lecturer on diseases of the chest and physical diagnosis, 1874; professor of laryngology from 1883 to 1890; professor of laryngology and practice of medicine from 1890 to 1893; laryngology and diseases of the chest from 1893 to 1898; professor of diseases of the chest, throat and nose, and comptroller since 1898. He also was professor of diseases of the throat and chest in the Northwestern Woman's Medical School from 1879 to 1898; professor of laryngology and rhinology in the Chicago Policlinic since 1890, and lecturer on medicine in the University of Chicago since 1901. Dr. Ingals was one of those who were instrumental in arranging the affiliation of Rush Medical College with the University of Chicago, especially in convincing President Harper of the university of the importance of linking medical education with the university in order to make progress. The importance of his connection as comptroller of Rush Medical College with the life of the medical school cannot be overestimated. The West has had few men who have worked so actively and efficiently for the advancement of scientific medicine.

Ephraim Fletcher Ingals, 1848-1918

Dr. Ingals was a Fellow of the American Medical Association, being trustee from 1893 to 1896, and from 1900 to 1903 a member of the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American College of Surgeons, the Chicago Institute of Medicine, the Chicago Pathological Society, the American Climatological Association and the American Medical College Association. He was chairman of the section of laryngology of the Pan-American Medical Congress in 1883. He was author of "Diseases of the Chest, Throat and Nose," the fourth edition of which appeared in 1900, and of many articles and monographs on the same subject. His most recent literary work, entitled "Angina Pectoris," was published in The Journal for April 6. In this he describes, in great detail, his own experience with this disease. During his severe and extended illness he displayed remarkable courage and bravery. His discussion of the condition reveals a sustained, clear, scientific consideration and judgment under most trying conditions.

Moses H. Waters, Terre Haute, Ind.; New York Homeopathic Medical College and Hospital, New York, 1865; aged 37; a member and formerly president of the Indiana Institute of Homeopathy; senior at the American Institute of Homeopathy; a veteran of the Civil War; formerly president of the Terre Haute Board of Health; general surgeon of the Morton Post Grand Army of the Republic; died at his home, April 14, from heart disease.

Lloyd Jones Belt, Millen, Ga.; New York University, New York, 1885; aged 61; formerly a Fellow of the American Medical Association; a member of the Medical Association of Georgia; formerly vice president of the Screven County Medical Society; a member of the State Commission on Tuberculosis; formerly president of the Jenkins County Medical Society; died at the Savannah, Ga., Hospital, April 9, from heart disease.

Lieut. Hugh Tate Moore, M. R. C., U. S. Army, Wilmington, N. C.; Tulane University, Medical Department, New Orleans, 1910; aged 31; a Fellow of the American Medical Association; a specialist in diseases of the eye, ear, nose and throat; a member of the medical staff of the Base Hospital at Camp Kearny, San Diego, Calif.; died, April 8, from mercuric chlorid poisoning, the drug being taken by mistake for calomel.

Capt. Peter L. S. Keough, M. R. C., U. S. Army, Pawtucket, R. I.; College of Physicians and Surgeons, Baltimore, 1912; aged 28; formerly a member of the Medical and Chirurgical Faculty of Maryland; formerly assistant superintendent of the Maryland State Hospital; and a member of the staff of the Memorial Hospital, Pawtucket; died while on active service at Camp Sherman, Ohio, April 15, from pneumonia.

Augustus Chapman Walker, Cambridge, Mass.; Harvard University Medical School, Boston, 1866; aged 84; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; a veteran of the Civil War; formerly a member of the State Board of Registration and Pharmacy; died at his home, April 5, from arteriosclerosis.

Lieut. Abraham Lewis Bobrick, M. R. C., U. S. Army, New York; Long Island Medical College, 1917; aged 26; house surgeon at the Harlem Hospital, New York, ordered to report at the Army Medical School, April 15, died at the Harlem Hospital, April 17, from streptococcus septicemia following an infection of the right forearm.

Robert Alexander Blackford, Martin's Ferry, Ohio; University of Pennsylvania, Philadelphia, 1899; aged 51; a Fellow of the American Medical Association; director of the Martin's Ferry Hospital; formerly president of the Martin's Ferry Board of Education; died in the Martin's Ferry Hospital, April 12, from pneumonia.

Jacob Friedman, St. Louis; Washington University, Medical School, St. Louis, 1878; aged 61; a Fellow of the American Medical Association; professor of therapeutics and clinical medicine in the St. Louis University, School of Medicine; died in the Augustana Hospital, Chicago, April 13, from carcinoma of the colon.

Lieut. Francis Virgil Frazier, M. R. C., U. S. Army; Altamont, Mo.; University of Nashville, Tenn., Medical Department, 1911; aged 29; a member of the Missouri State Medical Association; died from wounds received from a German bomb, while passing from one base hospital to another on the Belgian front, April 3.

Perley G. Garlick, San Francisco; Hahnemann Medical College of the Pacific, San Francisco, 1903; aged 42; formerly associate professor of dermatology in the Hahnemann Medical College of the Pacific; a member of the American Institute of Homeopathy; died at his home, January 27, from ruptured aortic aneurysm.

George Baptie, Ottawa, Ont.; Trinity Medical College, Toronto, 1875; aged 72; professor of chemistry in Provincial Agricultural College, Guelph; formerly coroner of Ottawa, former president of the Ottawa Clinical Society, and Medico-Chirurgical Society; died at his home, January 5, from Bright's disease.

Albert V. Linton, Saginaw, Mich.; College of Physicians and Surgeons, Keokuk, Iowa, 1889; aged 53; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; at one time coroner of Saginaw County; died at his home, April 7.

Edward Mott Moore, Rochester, N. Y.; University of Buffalo, Medical Department, 1874; aged 67; formerly a Fellow of the American Medical Association; a member of the American Surgical Society, and the American Academy of Medicine; died at his home, April 5.

Charles F. Scattergood, Albany, N. Y.; Albany, N. Y., Medical College, 1868; aged 74; local chairman of the National Society of Chiropodists; and was a charter member and treasurer of the Albany division of the State Pedic Society; died at his home, April 1.

Silvio Henry Von Ruck, Asheville, N. C.; University of Bellevue Hospital Medical College, New York City, 1899; aged 42; a Fellow of the American Medical Association; a noted authority on tuberculosis research; died in a hotel in New York City, April 8, from pneumonia.

James W. O'Connor, Elizabethtown, Ky.; Kentucky School of Medicine, Louisville, 1889; aged 56; formerly a Fellow of the American Medical Association; a member of the Kentucky State Medical Association; died suddenly, January 30, from organic heart disease.

Isidor Samuel Leopold Bermann, Washington, D. C.; University of Wurzburg, Germany, 1878; aged 72; a Fellow of the American Medical Association; a specialist in diseases of the eye, ear, nose and throat; died at his home, about April 6, from angina pectoris.

Edward Mortimer Boykin, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1905; aged 34; a member of the South Carolina Medical Association; died at the Roper Hospital, Charleston, April 4, from meningitis.

Jesse A. Clason, Fond du Lac, Wis.; Missouri Medical College, St. Louis, 1884; aged 57; formerly a Fellow of the American Medical Association; a member of the Wisconsin State Medical Society; died at his home, April 7, from heart disease.

James Horace Ingalls, Worcester, Mass.; Kentucky University, Medical Department, Louisville, 1904; aged 37; for several years connected with the Emergency Hospital, Worcester; died at his home, April 6, from pneumonia.

Merritt E. Proctor, Lake Placid, N. Y.; Baltimore Medical College, 1907; aged 35; a Fellow of the American Medical Association; county health officer of Essex County; died at his home, April 4, from cerebral hemorrhage.

Maurice J. Silverman, New York; New York University, Medical Department, New York, 1892; aged 55; a Fellow of the American Medical Association; died suddenly while visiting a patient, April 11, from heart disease.

Selvy Andrey Bass, Wichita, Kan.; Hahnemann Medical College and Hospital, Chicago, 1881; aged 65; formerly a member of the staff of Wichita Hospital; died at his home, April 8, from heart disease.

James William Shaul, Los Angeles; University of Buffalo Medical Department, 1896; aged 47; a Fellow of the American Medical Association; died at his home, February 21, from heart disease.

Edwin Huntington Bailey, Flint, Mich.; Detroit Homeopathic Medical College, 1903; aged 37; a member of the Michigan State Medical Society; died at his home, April 4, from pneumonia.

William S. Throckmorton, Canonsburg, Pa.; Jefferson Medical College, 1865; aged 79; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, April 5.

Died in the Service
LOST AT SEA
LIEUT.-COL. WILLIAM W. RENO, M. C., U. S. ARMY, 1873-1918
(See The Journal, April 20, p. 1182)

George Mill, Philadelphia; Medico Chirurgical College of Philadelphia, 1902; aged 41; a member of the Medical Society of the state of Pennsylvania; died at his home, March 7, from pneumonia.

Bernard Oscar Harris, Detroit; Detroit College of Medicine and Surgery, 1914; aged 23; a Fellow of the American Medical Association; died at his home, April 9, from pneumonia.

Charles F. Livengood, Boswell, Pa.; Baltimore Medical College, 1896; aged 53; a Fellow of the American Medical Association; died suddenly at his home, March 26, from paralysis.

P. Louis Nagin, New York; Long Island College Hospital, Brooklyn, 1914; aged 32; formerly clinic physician of Gouverneur Hospital; died at the Rockefeller Hospital, April 5.

Thomas J. Deem, Parkersburg, W. Va.; Starling Medical College, Columbus, 1891; aged 50; died suddenly at his home in Vienna, April 3, from heart disease.

Charles C. Jolliffe, Hasbrouck Heights, N. J.; Kentucky School of Medicine, 1892; aged 69; died in the Hackensack Hospital, Hackensack, N. J., April 7.

Anthony P. Witting, Evansville, Ind.; Jefferson Medical College, 1879; aged 64; died at St. Mary's Hospital, Evansville, April 6, from pneumonia.

Irwin Hibbs, Brazil, Ind.; Kentucky School of Medicine, Louisville, 1854; aged 89; died at the home of his son, April 10, from senile debility.

Van Dyck McKelvey, Denver; Denver and Gross College of Medicine, Denver, 1910; aged 30; died at his home, April 4, from pneumonia.

John W. Reed, Beallsville, Ohio; Medical College of Ohio, Cincinnati, 1864; aged 77; died at his home, January 28, from bronchial pneumonia.

Norman Leslie Beale, Middletown, Del.; Atlantic Medical College, Baltimore, Md., 1909; aged 34; died at his home, April 7, from pneumonia.

Henry W. Boynton, Toledo, Iowa; Albany (N. Y.) Medical College, 1866; aged 80; died at his home, January 21, from cardiorenal disease.

Joseph B. George, Gainesville, Ga.; Medical College of the State of South Carolina, Charleston, 1890; aged 56; died at his home, April 5.

John H. DeWitt, Saugerties, N. Y.; Albany, N. Y., Medical College, 1863; aged 75; health officer of the town and village of Saugerties; died at his home, March 18.

James Buchanan King, Wyoming, Ohio; Miami Medical College, Cincinnati, 1885; aged 54; a member of the Academy of Medicine; died at his home, April 10.

Milton M. Catlin, Canton, Ohio; Western Homeopathic College, Cleveland, 1868; aged 72; died at his home, April 4, from pneumonia.

Gustavus Weems Petherbridge, Charlotte Hall, Md.; University of Maryland, Baltimore, 1866; aged 72; died at his home, March 9.

Lewis P. Walton, Atlanta, Ga.; Meharry Medical College, Memphis, Tenn., 1900; a colored practitioner; died at his home, April 4.

Frederick Veazile Hardwick, Boston (license, Massachusetts, 1904); aged 40; died at his home, April 9, from pneumonia.

A. R. Bowen, Tyro, Miss. (license, Mississippi, 1882); aged 69; died at his home, April 15.

Correspondence

TO THE CONSTITUENT ORGANIZATIONS OF THE AMERICAN MEDICAL ASSOCIATION

To the Editor:—May I address through THE JOURNAL, particularly the officers of constituent and component organizations of the American Medical Association? The necessity of securing an American army of physically efficient troops is of immediate fundamental importance to the United States. The initial steps toward this lie with and are dependent on the medical profession. The obligation is no longer limited to those appointed by governors to examine registrants, but has been, morally at least, imposed on the entire profession. It is axiomatic that our troops must be of finer fiber, stronger physique, better drilled and officered than an equal number of the enemy, that we may prevail. It therefore becomes the duty of every member of the American Medical Association to aid in securing soldiers of such physical stamina. In attaining this result the cooperation of physicians is confidently anticipated.

I conceive it to be the duty of the officers of constituent state medical associations and component county societies, the branches of the American Medical Association, to assist actively in carrying out the medical detail connected with the selective service law. The importance of medical examinations, careful in detail and accurate of record, cannot be exaggerated. Delays of induction, confusion in mobilization camps, and expenses to registrants and to the government have been entailed that could have been minimized and it is hoped may be avoided hereafter. If county medical societies will make a study, with discussions, of that part of the selective service regulations and their elaborations bearing on physical examinations, and will proffer assistance to examiners of local boards, who have doubled their daily duties by doing this work, the advantages to the service will be of inestimable value.

There are almost 5,000 local boards in the United States. One neglect or error, or delay of an examination or in recording its results in one day, multiplied by the number of registrants examined, arrives at a staggering total of possible mistakes. Errors in grouping men who pass before local and medical advisory boards result in the deferred classification of men who belong in Group A. This detains those who should be in service and sends others to duty in their place, or sends to camp men belonging in Group B because of a remediable defect not remedied, and no provision made except for their rejection, or, again, results in inducting into camp men falling into Group C, qualified only for special or limited service, when no call for such men has been issued.

There is a medical education to be had through the examination of many registrants, and the close professional contact with other medical men is of value, quite independent of other considerations. A weakness in our preparation for war has developed within the medical profession, not from incompetence nor from disloyalty nor from indifference, but rather from lack of experience in military matters. This has hindered somewhat the securing of a perfect execution of the medical examination of registrants—a fundamental necessity.

It was not possible to provide a medical advisory board for every local board, but one has been placed within the reach of nearly all. Their assistance should be invoked in all cases of doubt. The expense connected will be less than that arising from the induction of an unfit registrant into camp and his return home after being rejected.

Advisory boards, when not in full quota, should not hesitate to refer selected registrants whose condition requires special technical study to a qualified specialist.

The records in this office suggest a failure to appreciate the importance of accuracy. Nature does not come to the examiner's assistance, but he must decide the registrant's future unaided. Indirectly, he is thus determining his country's safety. District boards of appeal may no longer conduct a medical examination, but appeal cases on physical grounds should be determined by the findings of local and medical advisory boards. This throws additional responsibility on these boards for painstaking examinations and for full and clearly stated records.

County medical societies could not more profitably occupy one or more meetings than by having examiners of registrants prepare papers on the selective service regulations pertaining to the examination of registrants, for discussion by members. Officers of state societies could provide for a session to be given over to the study of this work, and the program in many sections of the American Medical Association, at its June meetings, might very profitably devote time to its discussion. In this way the physical examination of registrants may be perfected and our Army strengthened immediately. From the exact recording of such examinations, sociologic data of great value will be obtained.

HUBERT WORK, Major, M. R. C., Washington, D. C.
Medical Aide to the Provost Marshal-General.

NUTS AS A FOOD SUPPLY

To the Editor:—The editorial on "Peanuts as Food" (THE JOURNAL, March 23, 1918, p. 850) is in line with progress. More, however, may be said to advantage. It is a rule in economics that people do not make an effort toward filling a need until the need is felt. The American Indians used a large number of plants that have not as yet been cultivated systematically for the general food market. Eventually civilized man may employ most of the things that the Indians ate. Man began to cultivate the annual plants that bring prompt return for his labors, and this he is likely to continue to do by preference until he comes to understand that nut bearing trees give a larger yield per acre at lesser expenditure of time, care and expense than annual plant crops require, as a general rule.

Nuts may be divided into two general classes, first those that are rich in fats and nitrogen, members of the *Juglandaceae*, for exmaple; and next the starchy nuts, members of the *Castaneae*, for example. In some parts of the world, nuts already furnish a basic food supply, and perhaps 200 kinds of nuts are employed to greater or lesser extent for substantial food supply or as luxuries.

One reason that nut bearing trees have not been more generally cultivated lies in the idea that many years are required for their coming into bearing. This is not true of grafted nut trees of several kinds, some of which begin to bear in the first year after transplanting from the nursery or after top working of standing stock trees.

If any of the members of the American Medical Association care to take up the subject, they may wish to know that we have in this country two journals devoted exclusively to nut growing, the *American Nut Journal*, published at Rochester, N. Y., and the *Nut Grower*, published at Waycross, Ga. A number of responsible nurserymen who make a special feature of grafted nut trees advertise in these journals. Grafted nut trees of superior varieties are the only sort worth setting out if one has any sort of commercial proposition in mind.

ROBERT T. MORRIS, M.D., New York.

VENEREAL DISEASE IN THE ARMY: A SUGGESTION

To the Editor:—The lowest venereal rate of our regular army since the war with Spain was attained in 1916, when 91.23 men per thousand acquired such infection. Prior to the present war, the venereal rate in the home army of England was about 68; of Austria, 54; France, 28; Prussia, 19, and Bavaria, 15. At the present rate, the daily average of disability for duty through venereal disease in our entire army exceeds 30,000 men.

The success of the prophylactic treatment admittedly depends on its early use—the sooner the better. Under present regulations, the soldier is not provided with nor required to use prophylactic measures at the time of exposure,

because it is believed that his use would be an inefficient substitute for the official treatment that he receives when he returns to camp—an indefinite time after exposure.

But why regard his effort as a substitute for the official treatment? Why may not both be used? Since Reasoner's observations (THE JOURNAL, March 31, 1917, p. 973) have corroborated the clinical belief that soap alone destroys the spirochete of syphilis, it seems desirable to supply the soldier, if not with a complete kit, at least with a package of "prophylactic" soap, as a first aid packet; and to explain to him clearly both the method and the necessity for thorough use immediately after exposure. If the soap should be scented with some freakish perfume and colored with an anilin dye, the soldier's neglect to use it would probably be detected when he reports at barracks for the official treatment, in which event he should be penalized for disobedience of orders. If he fails to report and develops venereal infection, he is penalized under present regulations.

WILLIAM T. BELFIELD, M.D., Chicago.

AS TO TOBACCO AND AVIATION

To the Editor:—The editorial on "The Physical Qualities of Aviators" (THE JOURNAL, April 27, 1918, p. 1229) condemns the use of alcoholics by fliers. I have noticed the same condemnation in other articles on the subject. On the face of it, it seems so plain that alcoholic narcosis has no place in so hazardous a task that it is almost unnecessary to mention the prohibition. Doubtless too, if a soldier were known to be under morphin narcosis, he would not be allowed to fly. Singularly enough though, the effect of tobacco narcosis on the aviator is never so much as mentioned. Cigaret narcosis has been conclusively proved to make the victim unsafe both to himself and to his fellow workmen, and by the law of business is not permitted to be indulged during working hours in factories. Can it be possible that such narcosis affects favorably the one who is to fly? Or does the cigaret user not apply for the position? Or is nicotin narcosis above and beyond discussion?

J. L. TRACY, M.D., Toledo, Ohio.

CONTINUOUS ELASTIC TRACTION IN THE TREATMENT OF CERTAIN FRACTURES OF THE PHALANGES

To the Editor:—There are occasional fractures of the phalanges in which it is difficult to hold the fragments in alinement by the methods usually employed. This applies especially to fractures of the phalanges of the toes, in which the fracture may be near the metatarsophalangeal junction and the toes are more or less deformed from the wearing of tight and narrow pointed shoes.

Some time ago (THE JOURNAL, Jan. 12, 1918, p. 78) I called attention to a new method of correcting the deformity in greenstick fractures of the forearm through the use of continuous elastic traction; and recently I have employed this principle in caring for two cases of complete fracture of the phalanges of the toes, in which roentgenoscopy showed that the fragments were not held in proper alinement by ordinary methods of treatment and there would be considerable angular deformity. In one case the fracture was within the web line, and angulation was marked and otherwise uncontrollable.

The following technic was employed: A long, well padded wooden splint, extending from the heel to about 1 inch beyond the toes, was applied to the plantar surface of the foot and held rigidly in place by adhesive plaster strapping and a bandage. One broad adhesive strip overlapped the anterior bodrer and ran along the entire under surface of the splint, over the heel, which was lightly padded, and continued 10 or 12 inches up the posterior surface of the leg; another adhesive strap about 2 inches wide embraced the posterior border of the splint and the heel and encircled the instep, while a third was somewhat loosely applied transversely at the level of the ball of the foot. A rubber band about one-eighth inch wide was cut at the center of one loop, and the resulting segments were fastened to the sides of the toe by a very narrow strip of adhesive plaster applied as a circular bandage. The free loop of the rubber band was then brought over the anterior end of the plantar splint under moderate tension and fastened securely by adhesive plaster, which embraced the loop and was attached for a considerable distance to the under surface of the splint. A gauze bandage was then applied from the toes to above the ankle.

In both cases in which this method was employed, the continuous slight elastic traction relieved the pain in a remarkably short time, the fragments were soon brought into almost perfect position, and the final results were equally pleasing.

WESLEY GROVE VINCENT, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

QUESTIONS OF INTEREST TO MEDICAL OFFICERS

To the Editor:—In THE JOURNAL last week I noticed a statement to the effect that medical reserve officers may now purchase equipment from the Quartermaster's Department. Is this law now pending in Congress or is it now effective? If so, shall I apply to the Quartermaster's Department of the nearest camp, that is, Camp Grant, for uniform and equipment? Can you give me an idea of the amount an officer's equipment would cost?

J. H. MCMORRIES, M.D., Muncie, Ind.

To the Editor:—At the last meeting of our county medical society I heard several members say that they would join the Medical Reserve Corps if it were not for the injustice of being obliged to spend between $350 and $400 for uniforms. Our society meets again soon, and I wish you would give me some information which I could offer the members. Can a medical officer buy uniforms from the government instead of paying these robbing clothing men from $60 to $100 for an overcoat?

A. G. B., Minn.

To the Editor:—I have just sent in my application for a commission in the Medical Reserve Corps. I am anxious to know just what the emoluments are. I am married and have one child and an orphan nephew depending on me. A full explanation of the remuneration of the officers of the various ranks will be greatly appreciated.

E. A. R.

To the Editor:—Can you furnish me with the following information: 1. Has the Chamberlain bill been passed by Congress and signed by the President? This bill provides for extra allowance to commissioned officers for commutation, board, room, etc. 2. Has the bill passed providing that the government furnish to commissioned officers the necessary uniforms, equipment, etc., at cost price?

MORRIS B. KARATZ, M.D., Chicago.

To the Editor:—Please indicate, roughly: (1) the approximate recompense of officers of the Medical Reserve Corps; (2) the cost of an ordinary service outfit.

R. B. OLESON, M.D., Lombard, Ill.

To the Editor:—I have just finished reading your editorial on the call for medical officers. In it you refer to a number of provisions which Congress has recently made to render it easier for men to enter the service. Among them you speak of the care of dependents, insurance and compensation, increased pay on foreign service, commutation of quarters, heat and light, moratorium on debts and leases of officers in the service, and purchase of equipment from the Quartermaster's Department. May I trouble you to supply me with information in regard to these points, or to advise me where I can obtain it, either in the columns of THE JOURNAL or elsewhere?

THOMAS J. HARRIS, M.D., New York.

ANSWER.—*Purchase of Equipment.*—A bill was introduced into Congress to permit officers to buy their equipment from the Quartermaster's Department; however, before the bill came up for passage a general order No. 22, March 2, 1918, was issued stating that "orders heretofore restricting the sales of clothing and equipage to officers are hereby rescinded, except as to sales of woolen coats and breeches. Sales will be permitted only when articles are available and not needed for immediate issue to enlisted men." The Surgeon-General's Office has suggested to Medical Reserve Corps officers that they provide themselves with the following articles so as to be in readiness when called: 1 hat, service; 2 breeches, service olive-drab; 1 coat, service, O. D.; 1 leggins, leather, officer's; 2 pairs shoes, russet; 2 shirts, woolen, O. D.; 1 sweater, army; 1 hat cord, officer's; collar insignia and insignia of rank; 1 notebook, manifolding, pocket; 1 compass; 1 watch.

Officers may use their own underclothing, socks, handkerchiefs and toilet articles. Additional articles to the foregoing list can be purchased later. Provide yourself with 1 bedding roll, 2 army blankets, 1 sleeping pad (or two comforters); 1 mosquito bar, cot; 1 canvas basin, 1 canvas bucket, 1 collapsible candle lantern; 1 folding camp chair. These are sold by private dealers. If possible, provide yourself with a trunk locker, army pattern, sold by the Quartermaster's Department or private dealers. Your necessary mess equipment includes: 1 canteen, cavalry; 1 canteen strap, cavalry; 1 cup; 1 knife; 1 fork; 1 spoon; 1 meat can. You can purchase these from the ordnance officer at the nearest military post; or write to the Commanding Officer, Rock Island Arsenal, Rock Island, Ill., for the necessary vouchers and costs. Private dealers also sell them.

Cost of Equipment.—The estimated cost of a *complete* initial equipment of good quality is well within $200, and many officers have obtained it at a lower cost.

Dealers in Uniforms.—The following dealers in uniforms have advertised in THE JOURNAL, and so far as we know have given satisfaction to those purchasing equipment from them: Sigmund Eisner Company, Red Bank, N. J.; Kahn Tailoring Company, Indianapolis; Jacob Reed's Sons, 1424 Chestnut Street, Philadelphia.

Salary of Medical Officers.—The salary of officers is as follows: first lieutenant, $2,000 a year and allowance for quarters, fuel and light; captain, $2,400 a year and allowance of quarters, fuel and light; major, $3,000 a year and allowance for quarters, fuel and light. The allowance for quarters is, respectively, $36, $48 and $60, and is allowed only to officers who have dependents. The allowance for fuel and light varies according to tables published by the Comptroller's department. Officers are not furnished with food, the average cost of mess varying from 75 cents to $1.25 per day.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular Board, Little Rock, May 14-15. Sec. Dr. T. J. Stout, Brinkley; Eclectic Board, Ft. Smith, May 13-14. Sec., Dr. C. E. Laws, Ft. Smith.

FLORIDA (H): Jacksonville, May 22. Sec., Dr. Geo. A. Davies, East Port.

GEORGIA: Atlanta and Augusta, May 30-June 1. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, May 6. Sec., Dr. G. A. Batten, Box 375, Honolulu.

ILLINOIS: Chicago, June 3-7. Mr. F. C. Dodds, Supt. of Registration, Capitol Bldg., Springfield.

KENTUCKY: Louisville, May 28-30. Sec., Dr. J. N. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 6-8. Sec., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

MASSACHUSETTS: Boston, May 14-16. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MICHIGAN: Ann Arbor, June 11-13. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 4-6. Sec., Dr. T. S. McDavitt, 741 Lowry Bldg., St. Paul.

NEVADA: Carson City, May 6. Sec., Dr. S. L. Lee, Carson City.

NEW YORK: Albany, Buffalo and Syracuse, May 21-24. Sec., Dr. W. J. Denno, Education Bldg., Albany.

OHIO: Columbus, June 4-7. Sec., Dr. H. M. Platter, State House, Columbus.

SOUTH CAROLINA: Columbia, June 11. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TENNESSEE: Knoxville, Memphis and Nashville, June 14-15. Sec., Dr. A. B. DeLoach, Exchange Bldg., Memphis.

Hawaii January Examination

Dr. Grover A. Batten, secretary of the Board of Medical Examiners of the Territory of Hawaii, reports the oral, practical and written examination held at Honolulu, Jan. 10-13, 1918. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. Six candidates were examined, of whom 3 passed and 3, including 1 osteopath, failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Hahnemann Med. Coll. and Hosp. of Chicago	(1917)	76
Tokyo Charity Hosp. Special Med. School	(1914)	76
University of Geneva	(1913)	91
FAILED		
University of Pennsylvania	(1896)	73
Tokyo Charity Hospital Special Med. School	(1916)	69

Indiana Reciprocity Report

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports that 4 candidates were licensed through reciprocity during 1918. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Bennett Medical College	(1911)	Illinois
Chicago College of Med. and Surg.	(1914)	Illinois
St. Louis University	(1916)	Missouri
Ohio Medical University	(1898)	Ohio

Iowa February Examination

Dr. Guilford Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Feb. 5-7, 1918. The examination covered 8 subjects and included 100 questions. An average of 75 per cent. was required to pass. Two candidates were examined, both of whom passed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Hahnemann Med. Coll. and Hosp. of Chicago	(1917)	85.2
St. Louis University	(1917)	85.2

Pennsylvania January Examination

Mr. Nathan C. Shaeffer, secretary of the Pennsylvania Bureau of Medical Education and Licensure, reports the oral and written examination held at Philadelphia, Jan. 8-10, 1918. The examination covered 5 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 50 candidates examined, 42 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
George Washington University	(1916)	1
Illinois Medical College	(1895)	1
Bellevue Hospital Medical College	(1895)	1
Cornell University	(1916)	1
Fordham University	(1916)	1
Western Reserve University	(1915)	1
Jefferson Medical College	(1915,3) (1916,13)	16
Medico-Chirurgical College of Philadelphia	(1915,1) (1916,7)	8
Temple University	(1916)	1
University of Pennsylvania	(1915,2) (1916,3)	5
Woman's Medical College of Pennsylvania	(1916)	5
Royal University of Naples	(1905)	1
FAILED		
Howard University	(1910)	1
Bennett College of Eclectic Med. and Surg.	(1886)	1
University of Louisville	(1912)	1
University of Michigan Medical School	(1902)	1
Western Reserve University	(1901)	1
Medico-Chirurgical College of Philadelphia	(1916)	2
College of Phys. and Surg., Baltimore	(1914)	1

Book Notices

ESSENTIALS OF PRESCRIPTION WRITING. By Cary Eggleston, M.D., Instructor in Pharmacology, Cornell University Medical College, New York City. Second edition. Cloth. Price, $1.25 net. Pp. 134. Philadelphia: W. B. Saunders Company, 1917.

The author has recently revised this little handbook with a view to bringing it up to date. It contains much that is valuable, and also much that is hardly necessary for medical students who are learning how to write prescriptions today. There are tendencies toward writing prescriptions in English, toward simplification of prescriptions, and toward limitation of the number of drugs to be studied and used which this little book does not take into account. Of the 127 pages twenty-two are taken up with Latin grammar.

NINE HUMOROUS TALES. By Anton Chekhov. Translated by Isaac Goldberg and Henry T. Schnittkind. Boards. Price, 25 cents. Pp. 60. Boston: The Stratford Company, 1918.

This is the first of a series of classics to be known as the Universal Library, published by the Stratford Company. The work of Chekhov should be particularly interesting as he was a physician, and the knowledge and point of view gained from his medical practice are noticeable in practically all his stories. He has been called the Russian "de Maupassant" and also the Russian "O. Henry." Many of his stories reveal a feeling for mankind, a spicy humor, and an insight into human nature such as were possessed by those great masters.

Medicolegal

Corporate Rights of the American Medical Association

(People ex rel Maclay Hoyne, v. W. W. Grant et al.)

Mr. Justice Farmer delivered the opinion of the Supreme Court of Illinois, in affirming the judgment of the Appellate Court:

This is an appeal from a judgment of the Appellate Court for the First District affirming a judgment of the circuit court of Cook County sustaining a demurrer to and dismissing an information in the nature of quo warranto to oust the defendants to the information from the office of trustees of the American Medical Association, a corporation not for pecuniary profit, organized under the laws of Illinois in 1897. The Appellate Court granted a certificate of importance, on which the case is brought to this court by appeal.

The question raised and on which we are asked to pass is the right of a corporation not for pecuniary profit, organized under the laws of the state of Illinois, to adopt a constitution or by-laws by which the members of the association can be deprived of the right to vote for the election of trustees, and which permit or authorize the election of a board of trustees outside the boundaries of the state of Illinois.

Articles 3 and 4 of the by-laws are as follows:

"Article 3. *Membership.*—The membership of this Association shall consist of such members of the constituent associations and of such medical officers of the Army, of the Navy and of the United States Public Health and Marine-Hospital Service as shall make application in accordance with the by-laws hereinafter provided.

"Article 4. *Constituent Association.*—State and territorial medical associations which have or which hereafter may become organized in accordance with the general plan of organization of the American Medical Association and . . . declare allegiance to the formation and the perpetuation of the House of Delegates of the American Medical Association shall be recognized as constituent association," etc.

Section I of Article 5 provides that the business body shall be known as the "House of Delegates" and consist of delegates elected by constituent associations, by the scientific sections of the American Medical Association, from the medical departments of the Army and the Navy and from the United States Public Health and Marine-Hospital Service, and that the house of delegates shall represent the delegated powers and shall be the national representative body of the constituent associations. The membership of the house of delegates was not to exceed 150.

The information was filed on the relation of Dr. G. Frank Lydston, who alleged in his petition, on which the information was filed, that he is a member in good standing of the Chicago Medical Society, which is a constituent association of the American Medical Association, and is also a member of the latter association. The information alleges that the by-laws of the American Medical Association provide for the election of delegates to the national House of Delegates, which House of Delegates shall elect three trustees each year, "at such place in such city and state as such house of delegates might assemble." The information alleges the American Medical Association had no authority, under its charter or the laws of the state, to adopt a constitution or by-laws by which the members of the association may be deprived of the right to vote for the election of trustees or which authorize the election of trustees outside of the state. It is then alleged that certain of the trustees were elected by the House of Delegates at Minneapolis, certain of them at Atlantic City, N. J., and certain of them at San Francisco, and that they were not lawfully elected and are usurpers of said office of trustees.

If the law governing the conduct of corporations organized for pecuniary profit in this state applies also to corporations organized not for pecuniary profit, it would have to be held that a meeting of the officers or directors held outside of the state and the election of trustees by delegates to such a meeting would be unlawful and the action void unless previously authorized or subsequently ratified. The first twenty-eight sections of the chapter of our statutes entitled "Corporations" relate to corporations organized for pecuniary profit. No provision of that part of the chapter relating to corporations organized for pecuniary profit contains any intimation of any right of a corporation to hold meetings beyond the limits of the state except Section 20, which permits a meeting to be held beyond the limits of the state where the meeting was authorized or the action taken at such meeting ratified by a vote of two thirds of the directors, trustees, or officers corresponding to trustees, at a regular meeting. When a meeting is held outside the state by the corporate officers without being previously authorized or subsequently ratified, as required by Section 20, the action of the officers will be void; but where the meeting outside was authorized or afterward ratified, the action of the corporation is as valid as if taken or had within the state (*Place* v. *People*, 192 Ill. 160). Sections 29 to 34, inclusive, of the chapter on corporations apply to corporations not organized for pecuniary profit. Section 32 provides that corporations not for pecuniary profit may elect trustees, directors or managers "in such manner, at such times and places, and for such period as may be provided by the certificate of incorporation, or in case such certificate does not contain such provisions, then as may be provided by the by-laws, which trustees, directors or managers shall have the control and management of the affairs and funds of the corporation, society or association." Here the by-laws provided the manner in whch trustees should be elected, namely, by the House of Delegates selected by the constituent associations, and provided that the times and places of such election should be fixed and determined by the House of Delegates, subject, however, to change by the unanimous action of the Board of Trustees at any time prior to two months of the time selected for the session. "The annual session may be held at any place in the United States." Pursuant to its by-laws the American Medical Association, at meetings held in the states of New Jersey, Minnesota and California, elected the trustees made defendants to the information.

The statutes relating to the control and conduct of corporations organized for pecuniary profit and those relating to the control and conduct of corporations organized not for pecuniary profit are not the same (*Santa Clara Female Academy* v. *Sullivan*, 116 Ill. 375), and the reasons for their being different are very apparent. Corporations not for pecuniary profit have no capital stock and pay no dividends. Many of them have constituent associations (as is the case with the American Medical Association) throughout the various states of the Union and hold national meetings at stated times, composed of representatives selected by the constituent associations. The life and success of such corporations depend on their being able to hold, and in holding, meetings and transacting business at various places selected throughout the United States. The reasons and the necessity for applying a different rule with respect to the places of holding meetings by corporations organized not for pecuniary profit and corporations organized for profit were fully stated in *Derry Council* v. *State Council Junior Order United American Mechanics*, 197 Pa. St. 413; 80 Am. St. Rep. 838.

It seems reasonably to follow that if a corporation not organized for pecuniary profit may hold meetings at stated times outside of the state of Illinois, composed of delegates selected by the constituent associations, for the transaction of the business of the corporation, it is not unlawful to authorize and provide for the election by said House of Delegates of trustees of the corporation. The American Medical Association was organized solely for the purpose of the advancement of medical science. Its purpose was to improve methods for the treatment and prevention of diseases of the human race. Its usefulness for these purposes would be seriously interfered with, if not absolutely destroyed, if it could not provide for the election of trustees from the most efficient men in the Association throughout the United States, by delegates selected by the constituent associations from the various states in the Union. Such authority to the House of Delegates is conferred by the by-laws and is not in conflict

with or prohibited by the constitution or laws of Illinois relating to corporations not for pecuniary profit (Hurd's Stat. 1917, chap. 32, sec. 32).

One question not insisted on in this court but which was urged in the Appellate Court and is extensively treated in the opinion of that court we think should be referred to here. When the relator, Dr. Lydston, presented a petition to the state's attorney of Cook County for leave to file an information in the nature of quo warranto and requested the state's attorney to file the information, the request was refused. Thereupon the relator filed a petition in the circuit court for a writ of mandamus to compel the state's attorney to sign a petition for leave to file the information. A demurrer was sustained to the petition by the circuit court and the petition dismissed. Relator appealed to the Appellate Court for the First District, which court in its final judgment reversed the decision of the circuit court and remanded the cause to that court. The Appellate Court in its opinion treats the entire merits of the controversy the same as if the information had been filed, and expresses the view that the corporation had no authority to elect trustees outside the state and that the house of delegates could not lawfully elect trustees. When the case was reinstated in the circuit court the demurrer was overruled in obedience to the mandate of the Appellate Court and a judgment entered awarding the peremptory writ of mandamus against the state's attorney. The Appellate Court, on appeal, affirmed that judgment for the reason it considered the previous decision and judgment of the Appellate Court conclusive on the Appellate Court on this second appeal. The appellant presented to this court a petition for a writ of certiorari, which was denied, and thereafter, in obedience to the writ of mandamus, the state's attorney signed the petition and filed the information, and the question presented in this case is the sufficiency of the information. The question raised in the Appellate Court but not insisted on here is that the denial of the writ of certiorari by this court amounted to an affirmance of the judgment of the Appellate Court, is res judicata and conclusive on this court.

The case before the Appellate Court on a petition for mandamus was a different case, and the parties to it were different parties, from the case and parties here before us. In the mandamus case it was sought to compel the state's attorney to sign the petition for leave to file, and to file, the information. If the petition made a prima facie showing of a proper case, it was the duty of the state's attorney to sign it, and the merits of the question would be determined on the information when filed, in which case those whose rights were attacked would have an opportunity to be heard. The real question, therefore, presented to the Appellate Court for determination was whether the petition for leave to file the information made such prima facie showing that the state's attorney should have signed it and presented it. The denial of the writ of certiorari, therefore, meant nothing more than that we approved the conclusion of the Appellate Court that the state's attorney should have signed and presented the petition. It did not mean that we approved the reasons set out in the opinion of that court and its determination of the merits of the case, and of the rights of the parties to be affected by the information when filed (*Soden* v. *Claney*, 269 Ill. 98). Until the information was filed, the parties defendant to it had no right to be heard or to present their defense. They were not parties to the mandamus proceeding.

Transformation of Homosexuality by Implanting Testicles.—The *Nederlandsch Tijdschrift* mentions briefly an article by E. Steinach and R. Lichtenstern in the *Münchener medizinische Wochenschrift* describing experimental research on the influencing of sexual characters by gland implantation, and a clinical case. This was in a homosexual man of 30 who had to be castrated on account of a tuberculous lesion. They implanted in the external oblique muscle, on both sides, half of an undescended testicle taken from a sexually normal man. It is said that the man felt heterosexual directly after the operation and the feminine characteristics he had previously presented became transformed in the male direction, and he married a year later.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, CHICAGO, JUNE 10-14.

Alpha Omega Alpha Society, Chicago, June 10.
American Climatological and Clin. Assn., Boston, June 5-6.
American Dermatological Association, Philadelphia, May 23-25.
American Gastro-Enterological Association, Atlantic City, May 6-7.
American Gynecological Society, Philadelphia, May 16-18.
American Laryngological Association, Atlantic City, May 27-29.
Amer. Laryn., Rhin. and Otol. Soc., Atlantic City, May 29-30.
American Medico-Psychological Association, Chicago, June 4-7.
American Neurological Association, Atlantic City, May 9-10.
American Otological Society, Atlantic City, May 28-29.
American Pediatric Society, Lenox, Mass., May 27-29.
American Proctologic Society, Chicago, June 10-11.
American Psychopathological Association, Atlantic City, May 11.
American Surgical Association, Cincinnati, June 6-8.
American Therapeutic Society, Richmond, Va., June 7-8.
Arkansas Medical Society, Jonesboro, May 7-9.
Association of American Physicians, Atlantic City, May 7-8.
Conference of State & Prov. Bds. of N. Amer., Washington, June 5-6.
Connecticut State Medical Society, Hartford, May 15-16.
Florida Medical Association, Tampa, May 15-16.
Illinois State Medical Society, Springfield, May 21-23.
Iowa State Medical Society, Fort Dodge, May 8-10.
Massachusetts Medical Society, Boston, June 18-19.
Michigan State Medical Society, Battle Creek, May 7-9.
Mississippi State Medical Association, Jackson, May 14-15.
Missouri State Medical Association, Jefferson City, May 6-8.
Nat. Assn. for the Study and Prev. of Tuberculosis, Boston, June 6-8.
Nebraska State Medical Association, Omaha, May 7-9.
New Hampshire Medical Society, Concord, May 15-16.
New Jersey Medical Society, Spring Lake, June 25-26.
New York State Medical Society, Albany, May 21-24.
North Dakota State Medical Association, Fargo, June 19-20.
Oklahoma State Medical Association, Tulsa, May 14-16.
Oregon State Medical Association, Portland, June 27-29.
Rhode Island Medical Society, Providence, June 6.
South Dakota State Medical Society, Mitchell, May 21-23.
Texas State Medical Association, San Antonio, May 14-16.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Meeting held at Philadelphia, March 29 and 30, 1918

The Rôle of Immunity in the Conduct of the Present War

DR. JOHN A. KOLMER, Philadelphia: Many practical problems lie before the immunologist. One is the discovery of a practical test, analogous to the Schick test, to ascertain the presence of a natural immunity to pneumonia and meningococcus meningitis, if such immunity exists. This may also obtain in the case of tetanus. Measles, anterior poliomyelitis, syphilis and gonorrhea are diseases that must be combated by some means of active immunization, not forgetting that problem of problems, the question of immunization against tuberculosis.

Active Immunity in Experimental Poliomyelitis

DR. H. L. ABRAMSON, New York: Rabbits were found to be unsatisfactory experimental material, and young *Macacus rhesus* monkeys were chosen for the work. An attenuation of the poliomyelitis virus was aimed at, bearing in mind the analogy to the rabies virus. The virus was exposed (1) to heat and (2) to chemical action. In the latter modification, 0.5 per cent. formaldehyd was used. The monkeys sickened and died of what was termed the marantic type of monkey paralysis. Modification by heat was then used, two methods of vaccine injection being tried. The first one consists of four successive daily injections of 5 c.c. of 10 per cent. emulsion in saline of brains and cords of recently infected monkeys. On the fifth day the animals received 5 c.c. of virus emulsion, unmodified by heat. The second type of vaccine was a 5 c.c. injection, on ten successive days, of emulsion in saline of brains and cords of infected monkeys, heated to 55 C. for a half hour. This was really a killed virus. It was then sought to determine the amount of immunity by the animals, and also the neutralizing properties of their blood serum. Eleven monkeys were subjected to the five day injection series, without ill effect. This method, being short, makes it particularly applicable during an epidemic. It seems to confer a strong degree of immunity.

Persons that have recovered from poliomyelitis contain in their blood neutralizing substances, and the same is true of monkeys. These substances can be artificially produced, and in sufficient quantity to overcome infection of human poliomyelitis, which is far less virulent than the type of disease produced in monkeys, experimentally.

DISCUSSION

DR. A. F. COCA, New York: It is important to emphasize the concluding remarks of Dr. Abramson. The conditions under which he was working to produce immunity were highly artificial, and this defense was more than was necessary to constitute an absolute resistance to the natural infection as occurring in human beings. The natural resistance might need very much less than the artificial one. In the artificial experiments, resistance was circumvented.

DR. W. H. PARK, New York: I can say one word in line with Dr. Coca's remarks. In test animals, one may react, and one may not react. The rabbit gives very feeble protective serum: the monkey gives better serum, but the horse gives as good or even better serum than the monkey. Perhaps Dr. Abramson would say a word on that question. In my own experiments I first used virus from the brain, digested by trypsin, and then straight virus. Different animals showed a different period of development of antibodies and also a different degree.

DR. JOHN A. KOLMER, Philadelphia: Has the serum been used in the treatment of human infections?

DR. H. L. ABRAMSON: In regard to rabbit poliomyelitis, I spent about six months inoculating animals to get signs of paralysis. I did not test for immune bodies. I then subjected monkeys to injections of virus from rabbits. The virus of the 1916 epidemic was tested. The incubation period was variable. The control came down in six days. The animal injected with rabbit cord came down in fourteen days.

The Types of Meningococci Concerned in Epidemic Infections

DRS. A. PARKER HITCHENS, Glenolden, Pa., and G. H. ROBINSON, Uniontown, Pa.: The troops in this country are now undergoing the same conditions as the British troops at the beginning of the war. The work of Gordon on the meningococci is of value. He classified the different strains, as had been done with the pneumococci, into four different types. In the present experiments, 100 cultures, received from the first of the year, have been classified into types according to the Gordon method. The strains had come from several concentration camps in this country. The cultures are gram-negative cocci and correspond more or less to Gordon's types, namely, I, parameningococcus; II, normal meningococcus; III and IV, types comparatively rarely found in this country. Each camp has a predominating type, but whether this is a true epidemic is not determined. It is hoped that specific serums may be evolved to counteract the types, as Gordon had excellent results with his specific strains. He found that if specific serum were given before the third day of the disease the mortality was only 9 per cent.; if on the seventh day, the mortality was 50 per cent.

The Influence of Active Normal Serum on Meningococci

DRS. JOHN A. KOLMER, I. TOYAMA and T. MATSUNAMI, Philadelphia: Fresh serum, both normal and immune, has greater antibacterial properties than old serum, the latter having sustained a loss of antibodies as well as complement and opsonins. Antimeningitis serum is rich in opsonins and has high phagocytic properties. Recovery from meningitis is in great measure due to this phagocytosis. A clinical test, the addition of 1 c.c. of fresh sterile human or guinea-pig serum to each 9 c.c. of antimeningitis serum, before intraspinal injection, would be of value for the purposes of increasing phagocytosis of the micro-organisms, especially in cases of severe and serum-resistant meningococcus meningitis.

The Influence of Active Normal Serum (Complement) on Meningococci

DRS. T. MATSUNAMI and J. A. KOLMER, Philadelphia: We found that the bactericidal activity in vitro of different antimeningitis serums is quite low. Fresh or active antimeningitis serums are somewhat more bactericidal than the same serums after inactivation by heating at 60 C. for thirty minutes. Active normal human and guinea-pig serums are slightly bactericidal for meningococci. Horse antimeningitis serum and normal human and guinea-pig serum are also found to have a bactericidal activity, independent of complemental bacteriolysis. It is further found that the use of whole blood was of more effect than the use of serum alone. The final conclusions from these experiments is that the addition of active normal human or guinea-pig serum (complement) to antimeningitis serum does not greatly add to bactericidal activity, as bacteriolysis is unimportant in antimeningitis serum; but it is also found that opsonic activity (an important curative factor) is greatly increased by such addition. Moreover, it is considered worth while, in view of these findings, to use clinically an antimeningitis serum to which has been added active human or guinea-pig serum, prior to intraspinal injections, especially in severe and serum-resistant cases. In this respect human serum is superior to guinea-pig serum, when proper aseptic precautions are maintained.

DISCUSSION

DR. WILLIAM H. PARK, New York: I should like to ask a question as to the use of "specific therapy" in the treatment of cerebrospinal meningitis. Could not one get a serum for one type which would be stronger than the polyvalent serum? If one or two types could be injected into the horse at once and an antiserum produced, the advantage would surely be greater than if one used two different horses for those types. Has a true polyvalent serum been produced?

DR. A. P. HITCHENS, Glenolden, Pa.: Dr. Park's point is well taken. There may, however, be greater possibility of reducing the death rate through the use of specific serums. It was possible that there might be immunologic variations of meningococci within the serologic types. It was well known that, with the best balanced serums obtainable, one finds cases of meningitis to resist the action of the polyvalent serum. Meningococci can not be accurately and sharply grouped within certain types, but follow the order of a chromatic scale. There are an almost innumerable number of slight variations.

DR. CHARLES KRUMWIEDE, New York: I am interested in the precipitin test diagnosis of type, but I am far from accepting its specificity. There are reactions alike for Types I and III, and Strain II will pick up Strain IV. Before progress can be made, an easier way of differentiation must be found; but I feel a little hopeless about discovering it.

A Rapid, Simple Method for Extraction of Precipitin Antigen from Bacteria

DR. CHARLES KRUMWIEDE, New York: This is not original, but it demonstrates the extraordinary resistance of bacterial precipitin antigen to both heat and chemicals. A very heavy suspension of bacteria is necessary for the technic. Antiformin is added and the mixture is kept boiling till the bacteria are dissolved. Phenolphthalein is next added, then hydrochloric acid, and finally alcohol. The solution is then dissolved to twenty times its volume with saline, to get rid of bacterial rests. The clear solution results in an extract to be diluted from fifty to 200 times. The essential point is to start with a very heavy bacterial suspension. Acid-fast bacteria can not be used for this method, as they are not dissolved by the solution.

DISCUSSION

DR. GEORGE SMITH, Glenolden, Pa.: Is this as valuable for the production of other immune bodies, when employed as antigen?

DR. CHARLES KRUMWIEDE, New York: I have tried to produce immune serum to the antigen. It does not produce any antibodies.

Observations on the Intraspinal Auto-Arsphenamized Serum Therapy of Cerebrospinal Syphilis

DR. BENJAMIN A. THOMAS, Philadelphia: Cases of tabes are often found that do not respond to treatment. The spinal fluid sometimes gives a positive Wassermann reaction, when the blood is negative. In four years' experience I have used auto-arsphenamized serum. Intraspinal injection is given

after intravenous injection, under careful sterile technic. An amount of spinal fluid is removed equal to the amount injected. The foot of the bed is raised after treatment. The treatment is continued until the spinal fluid is permanently negative. If improvement is found to follow intensive intravenous treatment, the intraspinal injection is not used. Degeneration of the cord cannot be affected by intraspinal methods of treatment. Vascular cases are found to respond better to intravenous treatment alone.

DISCUSSION

DR. H. L. ABRAMSON, New York: Was whole serum used, or was it diluted with salt solution?

DR. J. A. KOLMER, Philadelphia: At the Polyclinic in Philadelphia we have a large number of cases of syphilis, under Dr. Schamberg's care. A number of intraspinal injections are given. We believe that something can be gained by arsphenamizing the serum in vitro after Ogilvie's method.

DR. B. A. THOMAS, Philadelphia: We diluted neither serum nor spinal fluid. I think that that is an open question. I do not put the patient under the ordeal of intraspinal injection, if it can be avoided.

(To be continued)

TENNESSEE STATE MEDICAL ASSOCIATION

Eighty-Fifth Annual Meeting, Held at Memphis, April 9-11, 1918

The Surgical Treatment of Chronic Gastric and Duodenal Ulcers

DR. R. L. SANDERS, Memphis: In the surgical treatment of duodenal ulcer, posterior all catgut gastro-enterostomy is the method of choice. In selected cases, pyloroplasty, after the method of Finney, is very satisfactory. When the ulcer is small and no obstruction present, it may be excised and the opening closed after the method of Heineke-Mikulicz. If there is a recurrence of symptoms, it is probably due to faulty technic.

The mortality is much higher in excision with the knife than that by the actual cautery. Balfour has shown that cautery excision of the ulcer is quite safe and that the resulting scar produces a limited amount of deformity. The heat destroys the ulcer and also the cancer liability. The opening thus made should be closed with chromic catgut and reenforced by a layer of omentum to prevent leakage. Gastroenterostomy should always accompany this procedure.

DISCUSSION

DR. J. HUGH CARTER, Memphis: While it is difficult to differentiate between gastric and duodenal ulcers and gallbladder diseases, as they are closely associated, yet it can be done by going over the history of the patient carefully and using the roentgen ray as an aid to diagnosis.

DR. G. C. SAVAGE, Nashville: I believe every operating room, where the stomach or duodenum is to be operated on for ulcer that may be cancerous, should be equipped with the machinery for producing the high frequency current of electricity, and that the spark desiccation treatment should be used, and not the galvanocautery or thermocautery.

DR. E. J. JOHNSON, Memphis: In any attempt to remove a duodenal ulcer we must consider the necrotic condition of the tissue due to extension of the ulcer beyond the reach of the finger, and we may have an additional sloughing.

Some Unsettled Points in the Etiology of Appendicitis

DRS. E. H. BAIRD and J. P. BAIRD, Dyersburg: Concurrent or recent attacks of tonsillitis and other infections of the upper air passages given in the histories of cases of appendicitis, especially in children, cause one to associate these cases together. In a certain number of these cases, pus has been taken from the gums, from the gallbladder or appendix, and cultures, and the predominating infection found in one closely corresponded to the other.

DISCUSSION

DR. JERE L. CROOK, Jackson: We are still losing 10 per cent. of all cases from appendicitis regardless of the time when operation is performed. This mortality in practically every instance is due to delay in removing the appendix. I have found a number of cases of appendicitis due to diseased teeth, both in children and in adults.

DR. JOHN L. JELKS, Memphis: I have known of a number of cases of pellagra in this section in which operation has been performed under the mistaken diagnosis of appendicitis. I would sound a note of warning not to operate in cases of appendicitis without a blood count.

DR. E. J. JOHNSON, Memphis: With reference to relying exclusively on a blood count, I agree with Dr. Jelks that if it is always convenient, a blood count should be made. On the other hand, I have seen a good many cases in which blood counts made by competent pathologists were negative, yet the clinical symptoms were positively convincing, and after the abdomen was opened, a badly diseased appendix was found and removed. If one relies too much on a blood count, some patients may be lost from appendicitis that might be saved by operation.

DR. WILLIAM KRAUSS, Memphis: A surgeon is never justified in going into the abdomen for an acute condition without a blood count, and this blood count should include both total and differential. A surgeon ought to have sense enough to estimate the value of the various points in his evidence before he operates. If his total and differential blood counts are negative, and he has other reasons to suppose that an operation is necessary, it is a question for his surgical judgment of what he is going to do next.

DR. ROBERT CALDWELL, Nashville: I grant that occasionally we see an acute appendix case in which there is not a leukocytosis. In my experience I recall only one such case. In all the others there has been a leukocytosis. I think we ought to have a blood count in all these cases if we are going to do scientific surgery.

Surgery of the Thyroid

DR. J. B. HASKINS, Chattanooga: A simple adolescent goiter should be given an opportunity to subside under proper management, and if it does not disappear after puberty is well established, it should be removed. In cases in which the enlargement begins to increase, operative treatment is especially advisable, as the gland will surely make pressure and may possibly change its form and become toxic.

DISCUSSION

DR. W. D. HAGGARD, Nashville: The adolescent types of goiter ought not to be operated on, as these patients get well without treatment and in spite of treatment; whereas the smooth adenomatous type of goiter should be removed because its growth is rapid. It is a deformity. It tends to undergo degeneration, and its enucleation is very simple. The large colloid tumor can be benefited in the early stages by iodin, and sometimes cured; but it becomes a nuisance on account of the deformity resulting, and is not an unmixed blessing because it occasionally undergoes not only malignant but sometimes toxic degeneration; hence this type of goiter should be removed.

Complete Intestinal Obstruction from Carcinoma of the Sigmoid and Rectum

DRS. W. D. HAGGARD and W. O. FLOYD, Nashville: Our experience in five cases justifies the following conclusions: 1. Intestinal obstruction from carcinoma of the sigmoid and rectum is preceded by a very definite set of prodromal symptoms. 2. These symptoms consist of attacks of colic, nausea and vomiting, without elevation of temperature, with a left-sided tenderness or tumefaction, with or without much pain, and with constipation, obstipation, loss of weight, and blood in the stools, over a period of a few to many months. 3. With these symptoms, especially in a patient within the cancer bearing age, a roentgen examination of the colon should be made, and if necessary an exploration to determine the diagnosis before complete obstruction has occurred. 4. With carcinoma undisturbed, it being one of the most deadly conditions known to the physician, why should we, with the foregoing symptoms, allow our patients to go undiagnosed until

obstruction actually occurs, which, without operation, is one of the most rapidly fatal lesions encountered within the abdominal cavity, and which with operation carries with it one of the highest mortality rates known to surgery?

DISCUSSION

DR. JOHN L. JELKS, Memphis: Cancer of the sigmoid is not disseminated as quickly as cancer elsewhere. Cancer of the sigmoid may remain latent for a long time, and cancer of almost any part of the colon is later in its metastasis than are cancers in some other localities. A diagnosis of cancer of the intestine, especially of the rectum and sigmoid, should never be delayed until bloody stools appear. Certainly, the diagnosis of, at least, a suspicious condition should be made by proctoscopy and sigmoidoscopy long before the latent and late symptoms appear.

Acute Osteomyelitis

DR. E. M. SANDERS, Nashville: Acute osteomyelitis is in all probability primarily a metastatic condition, and the focus exists, or has existed, in the patient, being regarded innocent perhaps at the time. Typhoid fever sometimes gives rise to symptoms very similar to those of osteomyelitis, but the Widal and leukocyte count will usually differentiate the conditions. In the fulminating type, in which convulsions and delirium are the first symptoms, the local condition may be overlooked until the postmortem clears up the case. The roentgen ray, when available, should always be tried; but a negative picture means nothing.

The Proper Interpretation of Bladder Symptoms

DR. GEORGE R. LIVERMORE, Memphis: Bladder symptoms may be due to disease of any part of the genito-urinary tract. A cystitis that does not respond to bladder irrigations in a short time is, in the majority of cases, due to infection higher up; but it is a fact that a cystitis may persist, even after the infection higher up has been eradicated. A pyelitis, due to infection following traumatism induced by a calculus, may clear up under pelvic lavage, diuretics, and rest in bed, with consequent relief of bladder symptoms, only to have both return if the stone is not removed. Therefore, it is important to find the cause, for it would be unfair to irrigate the pelves of the kidneys for a pyelitis that was constantly being reinfected from a pus pocket in the tonsils.

Contracture of the neck of the bladder, prostatic bar and hypertrophy of the prostate produce similar symptoms, and as the treatment is so different one should be sure that one's diagnosis is correct before subjecting patients to treatment. Every person presenting bladder symptoms should be subjected to a complete physical, chemical, microscopic, cystoscopic and roentgen-ray examination before treatment is begun, for only by such painstaking study can one accurately locate and scientifically treat diseases of the genito-urinary system.

Surgical Treatment of Varicose Veins

DR. WILLIAM S. ANDERSON, Memphis: The following operation has proved satisfactory: About an inch below Poupart's ligament a transverse incision is made in the groin 2 or 3 inches long, and through this the saphenous vein is exposed at the opening and ligated; the vein is now dissected by the Mayo stripper or any other satisfactory means down to the region just below the knee. At this point open dissection should be used, for here the larger branches of the great vein begin to enter, and it is always advisable to dissect out all the veins of the calf down to where they are very small. This is easily done by a long cut from the knee to the ankle down to the deep fascia, turning back the flap of skin and fat and dissecting out the veins. The cure of the ulcer depends largely on the complete removal of the vein; but if the ulcer is associated with a thick base of scar tissue, it is best to remove it down to or better through the deep fascia with the mass of poorly nourished scar tissue beneath and around them. This procedure may lay bare quite an exposed area, and it is best to cover this at once with Thiersch skin grafts. The third requisite is secured by the proper nourishment of the skin and the proper healing of the wound by perfect hemostasis, proper asepsis, and delicate handling of the tissues.

The whole leg is kept well bandaged, immobilized and elevated for one week. After this the calf should be kept well bandaged for a week longer. After slight exercise the patient is allowed to get up. The leg to the knee should be kept well supported by a well applied bandage for several weeks longer, and then the bandage discarded.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Orthopedic Surgery, Boston

April, 1918, **16**, No. 4

1 *New Procedure for Compensatory Shortening of Unaffected Femur in Cases of Considerable Asymmetry of Lower Limbs (Fractures of Femur, Coxalgia, etc.). J. Calvé and M. Galland, France. —p. 211.
2 Some Conditions of Artificial Stumps. E. M. Little, England. —p. 236.
3 Results of New Operation for Obstetric Paralysis. J. W. Sever, Boston.—p. 248.
4 *Treatment of Lesion of Musculospiral Nerve in Military Surgery. N. Dunn.—p. 258.

1. **Compensatory Shortening of Femur.**—Three procedures are proposed by Calvé and Galland: First, "autopegging;" second, a "setting procedure;" third, "the procedure of direct holding" (dovetailing) which the authors have practiced twice on the living subject, is difficult of execution if it is to be carried out with true mathematical precision. It is better not to employ this method. Autopegging: The upper fragment is cut obliquely, with the obliquity from above downward, from within outward, and from the back forward, following a predetermined plan. Due to the mechanical procedure, the lower fragment presents an exactly identical obliquity. At the lower part of this section, that is to say, the part lowest down and to the outside, a quadrangular tenon is cut out with a rotary electric saw. The tenon is inserted and sutured into the medullary canal of the upper fragment. Experience has shown that angular displacement of the lower fragment (anterior, posterior, or lateral) is impossible. Setting by tenon and mortise. The lower fragment is cut as in the preceding method, but the extremity of the tenon is bevelled on its upper face. The tenon, as in the previous method, presents lateral parallel cut surfaces. The upper fragment has the same oblique section as before, but a mortise is cut which allows the exact fitting in of the tenon. When the osseous extremities are fitted in, the oblique section prevents the forward and outward displacement of the lower fragment. The tenon, held by strong catgut or reindeer tenon, cannot fall into the medullary cavity, which prevents the backward and inward displacement of the lower fragment. The tenon set in the mortise prevents lateral displacement. Finally, on account of the bevelling of the tenon on the upper surface, it cannot slip round and get out of the mortise. Direct holding (dovetailing). Two lower tenons are set in two upper mortises; two upper tenons are set in two lower mortises. Each of these tenons is the crown of an arch, and one ought to prevent backward displacement, while the others oppose displacement forward and to the side.

4. **Treatment of Lesion of Musculospiral Nerve.**—Dunn has had under treatment at the Military Orthopedic Hospital, Shepherds Bush, twenty-six cases of partial or complete lesion of the musculospiral nerve or its branches. Preoperative treatment of the lesion included: (*a*) splintage; (*b*) electrical treatment and massage. The method of suture which Dunn has adopted has been transfixion of the nerve by a single suture to maintain apposition until the sheath has been united by either continuous or interrupted sutures, when the tension suture can usually be removed. The nerve

can then be wrapped in cargile membrane, egg membrane, or fascia, etc. Dunn has seen recovery take place where no ensheathing membrane has been used, and it has been his practice for the last ten months to dispense with wrapping. The points he attaches most importance to are careful handling of the nerve—uniting the nerve without torsion, so that bundles, originally in continuity, are again in apposition; taking care that the fine suture bites the sheath only, and unites its edges accurately, and where much scar tissue is present, embedding the nerve in healthy muscle substance. If the lesion is the result of a clean bullet wound, Dunn says, operation may be safely performed as soon as the superficial wounds are healed.

In cases in which the wound has been septic, it is his practice to allow at least two months to elapse after the last sinus has healed before proceeding to suture of the nerve, and in cases in which there has been involvement of bone with the scar adherent, it is advisable to excise the scar, suturing the nerve a fortnight later if primary healing has taken place. Where the case is complicated with limitation of the flexion of the elbow, it is important to overcome this before suture, as the position of acute flexion in the pronated position, will, with stretching, allow apposition of the ends in cases in which there is destruction of 2 to 3 inches of nerve substance. This position should be maintained continuously for one month after operation. If the lesion is complicated by an ununited fracture of the humerus, one should, before proceeding to bone grafting, explore the nerve and see that suture without tension is possible, as the question of further shortening of the humerus might arise. Dunn has performed nerve grafting on two occasions only, and in neither has this proved satisfactory.

American Journal of Physiology, Baltimore

March, 1918, **45**, No. 4

5 Sensory Activation by Alkalies. W. J. Crozier.—p. 315.
6 Sensory Activation by Acids. W. J. Crozier.—p. 323.
7 *Differences in Behavior of Segments from Different Parts of Intestine. W. C. Alvarez, San Francisco.—p. 342.
8 Quantitative Studies on Intracellular Respiration. Relation of Oxygen Concentration and Rate of Intracellular Oxidation in Paramecium Caudatum. E. J. Lund, Minneapolis.—p. 351.
9 Id. Rate of Oxidations in Paramecium Caudatum and Its Independence of Toxic Action of Potassium Cyanid. E. J. Lund, Minneapolis.—p. 365.
10 Quantitative Study of Effect of Radium Radiations on Fertilization Membrane of Nereis. A. C. Redfield and E. M. Bright, Woods Hole, Mass.—p. 374.
11 *Mechanism of Action of Anesthetics. W. E. Burge, A. J. Neill and R. Ashman, Urbana, Ill.—p. 388.
12 *Relation Between Growth Capacity and Weight at Birth. F. S. Hammett, Boston.—p. 396.
13 Increase of Permeability to Water in Fertilized Sea Urchin Eggs and Influence of Cyanid and Anesthetics on Change. R. S. Lillie.—p. 406.
14 Experimental Study of Alternating Growth and Suppression of Growth in Albino Mouse, with Special Reference to Economy of Food Consumption. H. B. Thompson and L. B. Mendel, New Haven, Conn.—p. 431.
15 Orokinase and Ptyalin in Saliva of Horse. C. E. Hayden, New York.—p. 461.
16 *Influence of Pituitary Extracts on Daily Output of Urine. M. H. Rees, Chicago.—p. 471.
17 *Initial and Progressive Stages of Circulatory Failure in Abdominal Shock. C. J. Wiggers, New York.—p. 485.
18 *Mode of Action of Food in Increasing Oxidation. W. E. Burge, A. J. Neill and R. Ashman, Chicago.—p. 500.
19 Threshold Values in Spinal Frog. Comparison of Flexion Reflex and Nerve Muscle Response. B. R. Lutz, Boston.—p. 507.
20 Id. Variations with Change of Temperature. B. R. Lutz, Boston.—p. 515.
21 *Effects of Epinephrin on Urine Flow of Anesthetized and Unanesthetized Dogs. R. E. L. Gunning, Chicago.—p. 528.

7. **Behavior of Isolated Intestinal Segments.**—Five segments excised from different parts of the rabbit's intestine were studied by Alvarez under identical conditions in warm aerated Locke's solution. He found that the segments of duodenum and jejunum have greater tone and contract more after cutting than do the ileal segments. The colon also has a high tone. The duodenal segment is generally the first to begin beating well. The tendency to rhythmic activity is graded from duodenum to ileum. The first few centimeters of duodenum, corresponding to the duodenal cap in man, does not beat well. The colon is very slow in starting up and it differs greatly from the small intestine in its behavior. The duodenum suffers more from trauma and from adverse conditions than do the other segments. Segments from sickly animals beat poorly and become fatigued early. These changes are often more marked in some segments than in others so that the gradation of rhythm is changed. The gradation of rate of contraction from duodenum to ileum is remarkably constant in normal animals. In one case the gradation was upset by the presence of an inflamed area in the ileum. The bowel in that region contracted 21.5 to 25 times per minute, or twice as fast as normal. After twenty-four hours, the segments beat at a faster rate and maintain the gradient. They continue to react normally to epinephrin and atropin.

11. **Mechanism of Action of Anesthetics.**—The authors' investigation showed that narcotics of widely different constitution, such as chloroform, ether, chloral hydrate, nitrous oxid and magnesium sulphate, decrease the catalase of the blood, parallel with the increase in the depth of narcosis. A very powerful anesthetic, such as chloroform, decreases the catalase more quickly and extensively than does a less powerful anesthetic, such as ether. Slowly acting anesthetics, such as chloral hydrate and magnesium sulphate, decrease, accordingly, the catalase of the blood more slowly than a quickly acting anesthetic such as nitrous oxid. As a result of the experiments reported in this paper, and of work done previously on the anesthetics in this laboratory, the theory is advanced that narcosis is due to the direct destruction of catalase by the narcotic, with resulting decrease in oxidation, while recovery from anesthesia is brought about by an increase in catalase due to the increased output from the liver, with resulting increase in oxidation.

12. **Growth Capacity and Weight at Birth.**—Hammett says that the growth capacity of human infants during the first two weeks after birth is in a large degree dependent on the weight at birth. It is roughly inversely proportional to the initial weight. The ability to recover and pass the initial weight after the postnatal decline obviously varies in the same way, so that at the completion of the period studied some 82 per cent. of those infants weighing between 5 and 6 pounds at birth have recovered or passed their initial weight, as compared with 20 per cent. of those weighing from 10 to 11 pounds. The intermediate groups vary inversely as to their weight at birth.

16. **Effect of Pituitary Extract on Urine Output.**—An investigation was made by Rees to find out, first, whether the subcutaneous injection of pituitary extract will cause any quantitative variation in the daily output of urine; second, whether such injection will in any way affect the quantity of urine excreted, and, if so, to find out if possible the factors involved. He found that subcutaneous injections of pituitary extract do not alter quantitatively the daily output of urine in cats and rabbits, nor do they cause any marked variation in the specific gravity of the urine. The subcutaneous injection of pituitary extracts causes a delay of seven to eight hours before the beginning of the diuresis which follows the ingestion of large amounts of water. This delay, however, does not cause any variation in the total amount of urine excreted in twenty-four hours. The delay in diuresis which is produced by subcutaneous injection of pituitary extract is due in part at least to a delayed absorption from the alimentary canal. The subcutaneous injection of pituitary extract has no influence on the diuresis induced by a continuous intravenous injection of isotonic salt solution.

17. **Stages of Circulatory Failure in Abdominal Shock.**—The fundamental aim of this research was to analyze the consecutive changes evident in optical records of the right auricular, right ventricular and central arterial pressures. The course of the circulatory failure in abdominal shock is divided by Wiggers into three stages: 1. The initial stage, lasting about thirty minutes after intestinal exposure, during which effective venous pressure and cardiac discharge are apparently not appreciably reduced but the arterial pressure,

as recorded precisely shows distinct alterations not adequately indicated by mean pressure manometers. 2. The progressive stage, lasting two to four hours, during which effective venous pressure falls progressively, cardiac efficiency is impaired and the arterial pressure falls toward a low level. The heart usually accelerates. 3. Complete circulatory failure, marked by a prolonged period during which effective venous pressure has reached its lowest level and the arterial pressure slowly falls further until death supervenes. During this stage cardiac slowing usually takes place. A careful study of the optical tracings of arterial, intraventricular and auricular pressures, accompanied by constant readings of the mean arterial and effective venous pressures during these stages, corroborates the conclusion—in the ascendency at the present time—that the decreased venous pressure and consequent reduction in minute output is the predominate factor in the pronounced fall of arterial pressure during the progressive stage of shock. The dynamics of the circulation indicate clearly, however, that a reduction in peripheral arterial resistance initiates the fall of arterial pressure and the diminished filling of the arterial trunks before the effective venous pressure and cardiac discharge are reduced. The rôle that a diminished arterial resistance plays in the circulatory failure is therefore directly established for the first time.

18. **Mode of Action of Food in Increasing Oxidation.**—The authors conclude from their observations that alcohol increases the catalase of the blood by stimulating the pancreas, the spleen, the gastric and intestinal glands and particularly the liver to an increased output of this enzyme. It is permissible, perhaps, to assume that food like alcohol stimulates the production of catalase in the organs mentioned and in this way causes an increase in oxidations.

21. **Effect of Epinephrin on Urine Flow in Dogs.**—Gunning found that epinephrin in all effective dosages administered intravenously inhibits the urine flow in both anesthetized and unanesthetized dogs. The threshold of the reaction is slightly lower in unanesthetized than in anesthetized animals. Small injections and infusions merely inhibit the flow of urine while larger doses produce a complete cessation of flow. The inhibition usually persists until shortly after the blood pressure reaction is complete. Diuresis succeeding the inhibition was not observed. The rapid return of the flow to normal after prolonged infusions suggests that the drug exercises its inhibition on the kidney function in a way other than by the ischemia produced. During the administration of ether the urine flow is completely checked and recovery under the anesthetic takes place slowly.

Bulletin of Johns Hopkins Hospital, Baltimore

April, 1918, **29**, No. 326

22 Cinq Ans Après. F. C. Shattuck, Boston.—p. 77.
23 Diabetes; Results of Past Treatment and Future Problems. E. P. Joslin, Boston.—p. 80.
24 *Study of an Auto-Agglutinin Occurring in Human Serum. M. C. Clough and I. M. Richter, Baltimore.—p. 86.
25 *Simple Method for Determination of Venous Pressure. N. W. Brown, Baltimore.—p. 93.

24. **Auto-Agglutinin Occurring in Human Serum.**—Auto-agglutination, or agglutination of red blood cells by serum from the same individual, was observed by Clough and Richter in the blood of a patient admitted to the hospital on account of a bronchopneumonia associated with chronic mitral endocarditis. Agglutination occurred only at low temperatures (below 22 C.), and broke up if heated to body temperature. Agglutination could be reproduced by again chilling the same preparation. This serum caused similar agglutination of red blood cells from other individuals of the same blood group (Group 3), and also of Group 4. (It contained ordinary iso-agglutinins active at body temperature for cells of members of Groups 1 and 2). The cells of the patient washed free from serum showed no tendency to agglutination, and behaved exactly as did cells from other individuals, Group 3. Hence the phenomenon depended solely on a peculiarity of the serum, and not of the cells. The active substance in the serum had many of the properties of an ordinary agglutinin. It was active in fairly high dilution (up to 1:500). It resisted heating to 60 C. for half an hour, but was destroyed at 65 C. It remained active after preservation in the icebox for several months. It was not dialyzable. It was not removed by extraction with chloroform. It was precipitated with the euglobulin by 36 volumes per cent. of saturated ammonium sulphate solution. It was absorbed from the serum during the process of agglutination (at low temperatures). It was entirely distinct from the ordinary iso-agglutinins in the serum, since either one could be removed from the serum, leaving the other intact.

The auto-agglutinin differed from ordinary agglutinins in the following ways: 1. It was active only at low temperature, the agglutination breaking up on warming. 2. It was absorbed from the serum only at low temperature, and was liberated from the cells on warming. 3. It was active on red blood cells from all of the different species of animals with which it was tested (man, rabbit, guinea-pig, hen, sheep, cat and pig). That the same substance was concerned in the agglutination of human cells and of cells from these different animals, and that it was distinct from the ordinary hetero-agglutinins, which were also present in the serum, was shown by absorption tests. No autohemolysin was present in the serum. A similar study of rouleaux formation was made in order to differentiate it more clearly from auto-agglutination. The substance causing rouleaux formation resembled the auto-agglutinin in that it, also, was active on cells from other individuals. Both substances were precipitated from the serum with the euglobulin, and neither was dialyzable. Unlike the auto-agglutinin, the rouleaux-forming substance was active only in concentrated serum. Its activity rapidly disappeared on standing, and fresh cells were necessary for the formation of rouleaux. Rouleaux formation occurred equally well at high or low temperature. Heating the serum to 65 C. increased its rouleaux-forming power. This substance was not absorbed from the serum by the cells in the process of rouleaux formation. The presence of the auto-agglutinin was probably not related in any way to the disease from which the patient was suffering. It persisted with slight variation in strength for a period of two months' observation, and was found to be present in the serum of a daughter of the patient. Hence it was probably not pathologic phenomenon, but an individual, hereditary peculiarity.

25. **Simple Method for Determination of Venous Pressure.**—An instrument for the measurement of pressure within peripheral veins has been constructed by Brown from an ordinary mercurial manometer. The apparatus consists of a single limb manometer in which water, carbon tetrachlorid or bromoform is substituted for mercury. To the manometer is connected a small, saddle shaped cup, 2 cm. in diameter, covered with the thinnest rubber tissue obtainable. This membrane must be loosely applied and should permit free oscillation without tension. A rubber bulb with thumb screw compressor regulates the pressure within the manometer. The use of carbon tetrachlorid or bromoform instead of water is advocated because of higher specific gravity and lower viscosity. The former is preferred for routine observations. The readings are reduced to water pressure. The principle employed is that described by von Basch in 1876 for the determination of arterial pressure.

California State Journal of Medicine, San Francisco

April, 1918, **16**, No. 4

26 Spasmodic Vasomotor Disturbances of Respiratory Tract, with Special Reference to Hay Fever. G. Selfridge, San Francisco.—p. 164.
27 Colloidal Gold (Lange) Test in Diagnosis. R. W. Harvey, San Francisco.—p. 170.
28 Permanganate Reduction Index of Cerebrospinal Fluid. E. A. Victors, San Francisco.—p. 175.
29 Obstetric Anesthesia. C. B. Palmer, San Francisco.—p. 175.
30 Refraction in Children. E. S. McClelland, Los Angeles.—p. 180.
31 Some Ocular Defects in Mentally Retarded Children. H. Barkan, San Francisco.—p. 183.
32 Congenital Occlusion of Choanae of Nose. H. Y. McNaught, San Francisco.—p. 193.
33 Kidney Infections in Women. W. E. Stevens, San Francisco.—p. 194.
34 Backward Displacement of Uterus. T. O. Burger, San Diego.—p. 197.

35 Preoperative Investigation by Group Study Suggested as Method for Lowering of Surgical Fatalities. F. W. Birtch, San Francisco.—p. 200.
36 Cardiospasm. T. J. Orbison, Los Angeles.—p. 202.
37 *New Device for Holding Fractures of Long Bones. J. A. Simpson, San Francisco.—p. 204.
38 Vaccine Therapy. T. H. Glenn, Los Angeles.—p. 205.
39 Rectal Hemorrhage. A. J. Zobel, San Francisco.—p. 207.
40 Management of Surgical Risk. F. Hinman, San Francisco.—p. 211.
41 Acute Gastroduodenal Perforations. E. Butler, San Francisco. —p. 215.

37. **Device for Holding Fractures of Long Bones.**—Believing that the principle of the internal splint is sound, but that its application has been faulty, Simpson has constructed a device consisting of two parts—a screw and a cannula, and is called a bushing screw, as the device is both a screw and a bushing. The length of the screw corresponds accurately with the depth of the bore in the bone (the diameter of the bone) and is threaded only for a short distance at the head end. In oblique fractures no plate is needed; all that is necessary is to expose the fracture by incision, reduce it and with the bone held firmly drill two holes, properly located, pass the screws through and tighten them. In transverse fractures a plate is needed. The advantages of this device are said to be that when applied, it has the effect of a screw with a head on both ends. It gives a firm grip on the plate, if one is used, and on the compact tissue on the opposite side of the bone.

Illinois Medical Journal, Chicago

April, 1918, **33**, No. 4

42 Attic of Middle Ear; Its Suppurative Conditions. O. T. Freer. Chicago.—p. 189.
43 Acute Infectious Diseases Observed in Cook County Hospital in 1917. M. L. Blatt, Chicago.—p. 203.
44 Open Treatment of Fractures. W. F. Scott, Oak Park.—p. 208.
45 Neglected Leukocyte Count from Diagnostic, Prognostic and Differential Standpoint. M. V. Gunn, Bloomington.—p. 212.
46 Problems of Medical Officer of Navy. H. E. Odell, Great Lakes. —p. 216.
47 Symptoms, Diagnosis and Treatment of Acute Anterior Poliomyelitis. I. Tumpowsky, Chicago.—p. 218.
48 Goiter. J. K. P. Hawks, Bloomington.—p. 221.
49 Nitrous Oxid Analgesia in Obstetrics. J. C. Hoag, Chicago.—p. 224.
50 Curved Needle Incision in Vaccination, New Technic. W. R. Abbott, Chicago.—p. 226.

Journal of Cutaneous Diseases, Chicago

April, 1918, **36**, No. 4

51 Eruption of Acuminate Papules in Acute Lichen Planus. D. W. Montgomery and G. D. Culver, San Francisco.—p. 203.
52 Ulcerating Granuloma of Pudenda; Report of Two Cases. V. Pardo, Havana, Cuba.—p. 206.
53 *Case of Scleroderma Diffusa in Girl, Nine Years of Age. H. Goodman, New York.—p. 210.
54 Case of Syphilitic Keratoderma. H. W. Baker, Toronto, Canada. —p. 220.
55 Two Cases of Gonorrheal Keratosis. W. H. Brown and A. M. Davidson, London, England.—p. 225.

53. **Case of Scleroderma Diffusa.**—The case reported by Goodman is an unusual example of acute diffuse scleroderma, in a child, 9 years of age. The disease followed a tonsillitis. It appeared first on the back of the neck, and spread so that no part of her body was left free. The heart rate was accelerated, but there was no evidence of cardiac disease. The mentality of the child was not affected. Malfunction of none of the glands of internal secretion could be determined. The child, after five months, had recovered. There remained some hardness of the scalp and of the skin of the thighs. No atrophy was present. Thyroid extract had been given for several months, but discontinued because of its effect on the heart rate and the presence of a tremor. Oil rubs had been given actively. Histologic study was not possible, as a biopsy was refused.

Journal of Nervous and Mental Disease, Lancaster, Pa.

March, 1918, **47**, No. 3

56 Estimation of Proportions of Gray and White Matter in Human Brain, Made Through Plane of Optic Chiasm by Means of Planimeter. A. E. Taft, Boston.—p. 161.
57 Case of Jacksonian Fits in Multiple Sclerosis. H. T. Patrick, Chicago.—p. 176.
58 *Leukemic Infiltration in Spinal Canal as Cause of Paraplegia. P. Bassoe, Chicago.—p. 180.
59 Charcot-Marie Type of Progressive Muscular Atrophy. G. Wilson, Philadelphia.—p. 191.
60 Graphic Representation of Pupils. F. R. Fry.—p. 205.

58. **Leukemic Infiltration in Spinal Cord.**—The case reported by Bassoe is an example of paraplegia caused by purely mechanical compression of the cord by a leukemic tumor growing into the spinal canal. There is no evidence of leukemic infiltration or old toxic degeneration of the cord. The onset of severe pain followed by paralysis evidently occurred at the time when the canal had become too small for the growing leukemic mass Bassoe says. If at that time laminectomy had been performed and the dura merely slit posteriorly, serious injury to the cord might have been avoided. However, at the time it was impossible to ascertain that no cord infiltration or hemorrhage existed and that the symptoms were of purely mechanical origin. The existence of leukemia in any form makes the patient a poor subject for a major operation, but under similar conditions, with sudden onset of signs of cord compression in a leukemic patient previously free from cord symptoms, Bassoe hereafter will at least seriously consider the advisability of an operation.

Kentucky Medical Journal, Bowling Green

April, 1918, **16**, No. 4

61 Etiology and Pathologic Physiology of Early Tuberculosis. C. S. Rockhill, Cincinnati.—p. 141.
62 Early Diagnosis of Pulmonary Tuberculosis. C. L. Sherman, Millwood.—p. 145.
63 Latency in Tuberculosis. J. Martin, Cynthiana.—p. 148.
64 Case of Hygroma Colli. L. Kahn, Louisville.—p. 152.
65 Diagnosis of Cerebrospinal Meningitis. J. D. Holston, Camp Zachary Taylor.—p. 153.
66 Angioneurotic Edema. C. V. Heistand, Merrimac.—p. 154.
67 Bronchial Asthma; Etiology, Symptomatology and Treatment. J. F. Dunn, Arlington.—p. 156.
68 How the Teacher Can Assist the Physician. J. S. Ragsdale, Paducah.—p. 157.
69 Value of Roentgen Ray in Diagnosis. D. Y. Keith, Louisville. —p. 160.

Maine Medical Association Journal, Portland

April, 1918, **8**, No. 9

70 Incomplete Rupture of Transverse Colon. F. H. Jackson, Houlton. —p. 251.
71 Duodenal Feeding and Surgery in Peptic Ulcer. R. F. Chase, Portland.—p. 254.

Medicine and Surgery, St. Louis

February, 1918, **2**, No. 2

72 Physical Reconstruction and Industrial Rehabilitation of Wounded and Diseased. F. D. Patterson, Harrisburg, Pa.—p. 127.
73 Review of Military Surgery for 1917. P. G. Skillern, Jr., Philadelphia.—p. 136.
74 Dermatology and War. H. H. Hazen, Washington, D. C.—p. 145.
75 Treatment of Infected Wounds with Dichloramin-T. W. E. Clark, Washington, D. C.—p. 152.
76 *Hitherto Undescribed Sequel to Measles. W. L. Vroom, Ridgewood, N. J.—p. 156.
77 Work in German Base Hospital. H. M. Richter, Chicago.—p. 159.
78 Résumé of Six Months' Base Hospital Experience. J. R. Buchbinder, Chicago.—p. 165.
79 Fibroma of Tongue with Consideration of Other Tumors of Tongue and Certain Technical Points in Tongue Resections. J. W. Churchman, New Haven, Conn.—p. 173.
80 Case of Pedicled Abdominal Transplant for Contracture of Finger. P. G. Skillern, Jr., Philadelphia.—p. 179.
81 Gastric Hemorrhage; Etiology, Clinical Manifestations and Treatment. F. Smithies, Chicago.—p. 180.
82 Acute Infection of Joints. J. K. Young, Philadelphia.—p. 190.
83 Diseases of Pituitary Gland. W. Engelbach and J. L. Tierney, St. Louis.—p. 193.

76. **Sequel to Measles.**—In each instance seen by Vroom the early course of the attack of measles was uneventful, pursuing the classical course with headache, rise of temperature, cough, conjunctivitis, and measles eruption over the face and body. On the sixth or seventh day from the advent of the eruption, the patient suddenly developed a sore throat in the nature of an acute pharyngitis: red, engorged and painful, a marked aphonia, a sharp rise in temperature to 103 to 104 F., and pronounced epistaxis. Large moist bronchial râles in both lungs became evident early, accompanied with very acute pleuritic pain, usually in one side. In those cases that event-

ually pursued a severe or fatal course, fine crepitant râles became evident on about the second day, followed with an effusion into one or both pleural cavities; at first serous in character, but with a tendency rapidly to become purulent. Percussion gave no evidence of pulmonary consolidation, nor did postmortem findings reveal such. Expectoration from the first profuse yellow, glairy, with not the tenacity of that of lobar pneumonia; it was very markedly streaked with bright blood, and was not blood stained. In those severely ill, the expectoration became scanty and rather frothy in character, on the third or fourth day, and the fine crepitant râles remained pronounced. Cyanosis was a symptom appearing on the second day after the sudden rise in temperature. The patients complained of a tightness across the chest and would allow themselves to be moved in bed only under protest. The lips became indented and covered with brown crusts. The pulse respiration ratio was 1 to 3. The blood pressure registered 90 to 95 systolic, and 60 to 75 diastolic. Pleural effusions occurred early, often on the second day. The cyanosis, often an early symptom, had every evidence of being a resulting carbon dioxid poisoning from the failure of the highly congested and inflamed pulmonary alveoli to functionate in exchanging carbon dioxid for oxygen. The patients who did not survive, generally died within the first week; those that lived, have passed through a slow and tedious convalescence, the fine crackling râles slowly disappearing and the cyanotic condition passing away. The aphonia has been quite persistent. The pathologic and bacterial findings have not been worked out sufficiently for presentation. The mortality occurring from these so-called bronchopneumonia cases was 27 per cent.

Modern Hospital, St. Louis

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84 Soldiers and Civil Hospitals. S. S. Goldwater, New York.—p. 233.
85 Hospital Schools for Crippled Soldiers. D. C. McMurtrie, New York.—p. 235.
86 Admitting System in Use at Milwaukee Children's Hospital. H. Gage, Milwaukee, Wis.—p. 242.
87 Standardization of Hospitals—Class XVII, Infectious Disease Hospitals. J. A. Hornsby and others.—p. 245.
88 Mechanical Equipment of Montefiore Home and Hospital. A. M. Feldman, New York.—p. 248.
89 Bookkeeping for Small Hospitals and Allied Institutions. H. K. Carter and C. A. Porter.—p. 254.
90 Relation of Hospital Superintendent to Research. H. O. Collins, Minneapolis.—p. 261.
91 Helen Newberry Nurses' Home. H. Leck, Detroit.—p. 264.
92 New Swedish Lutheran Hospital at Moline, Ill. O. Z. Cervin, Rock Island, Ill.—p. 267.
93 An Argument for Beauty in Hospital. H. J. Davison, New York.—p. 277.

New Jersey Medical Society Journal, Orange

April, 1918, **15**, No. 4

94 Neglect of Internal Secretions as Cause of High Mortality in Many Diseases. C. E. de M. Sajous, Philadelphia.—p. 109.
95 Aural Catarrh. T. R. Chambers, Jersey City.—p. 116.
96 Transfer of Casualties in War. C. H. Wintsch, Newark.—p. 119.
97 Arterial Hypertension. B. Gutmann, New Brunswick.—p. 122.

Oklahoma State Medical Association Journal, Muskogee

April, 1918, **11**, No. 4

98 Inflammation of Abdominal Tonsil. G. A. Wall, Tulsa.—p. 111.
99 Tuberculosis of Kidney. D. N. Eisendrath, Chicago.—p. 114. To be continued.
100 Recent Advances in Diagnosis and Treatment of Pneumonia. O. J. Walker, Oklahoma City.—p. 117.
101 Tubercle Bacilli in Blood of Tuberculous Animals and Man. H. S. Browne, Norman.—p. 122.
102 Thyroid in Uterine Hemorrhage. O. C. Klass, Muskogee.—p. 125.

Tennessee State Medical Association Journal, Nashville

April, 1918, **10**, No. 12

103 Tuberculosis within Abdominal Cavity; Report of Case. W. O. Floyd, Nashville.—p. 463.
104 Acute Pyothorax. B. B. Cates, Knoxville.—p. 467.
105 Drug Addiction and Newborn. K. S. Howlett, Franklin.—p. 468.
106 Warning against Operations for Varicocele on Applicants for Enlistment. Registrants for Selective Draft and Soldiers. J. C. Bloodgood, Baltimore.—p. 469.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

March 23, 1918, **1**, No. 2986

1 *Primary Suture of Wounds at Front in France. A. Bowlby.—p. 333.
2 *Gunshot Wounds of Abdomen at Casualty Clearing Station. R. Charles.—p. 337.
3 Shell Wound of Pancreas Causing Pancreatic Pseudocyst. J. Morley.—p. 341.
4 *Treatment of Infected War Wounds by Magnesium Sulphate. A. E. Morison.—p. 432.
5 Postoperative Thrombosis and Embolism. C. J. Symonds.—p. 344.

1. **Primary Suture of Wounds.**—Bowlby presents a summary of the results obtained in the treatment of wounds by various methods and emphasizes one method in particular, that of primary suture of wounds. He says that while success depends on many conditions which are beyond the control of the surgeon, it depends very largely on the surgeon himself. Primary suture of wounds is more likely to end in disaster than in benefit unless the operation is most carefully performed, and this implies, in the first place, the most minute aseptic precautions, such as are commonly practiced by British surgeons in their most serious operations in civil work. No more skin should be excised than is absolutely necessary; even if badly damaged it can often be saved. In the next place, the operation must be done most deliberately and thoroughly, so that no part of the wounded area escapes treatment. This all means a good deal more time than is required for the opening up and cleansing of the average infected wound which is not suitable for suture, but it is time well spent, especially if the case is one of fracture. On the other hand, operation for the excision and cleansing of small superficial wounds can be done quite quickly, and no class benefits more than these by this method of treatment. It is in the class of slightly wounded, with injuries of the soft parts, or flesh wounds, that early and careful operation yields the highest proportion of success. Hitherto, when wounded are numerous, these patients have habitually been carefully dressed but not submitted to operation. Often many weeks or months have elapsed before their wounds have finally closed, and for all this time they have been inmates of hospitals and frequently confined to bed. Some of them have had serious complications as well. Successful suture makes a complete cure of such patients in a time measured by days or weeks instead of by months.

The benefit to the more seriously wounded is still more obvious. Not only are compound fractures converted into simple ones, but the period of confinement to bed and to the hospital is greatly shortened. The absence of sepsis is well seen in the features of the patients, whose good color tells its own tale. There is none of the general loss of flesh, none of the shrunken and stiff, wooden-like limbs seen after prolonged suppuration, none of the stiffness of all the joints of the affected limb which is so long in recovering. Out of a total of 626 cases, 68 per cent. were successfully sutured and healed by first intention. At the observation hospital 123 wounds have been sutured, with success in 83 per cent. In these three separate areas there is a total of 1,202 cases under various surgeons, with success in about 70 per cent. Moreover, in many of the remaining 30 per cent. there was a very early closure of the wound in spite of superficial suppuration. The success obtained in cases of fracture is also very striking, showing 75 per cent. of successes. The amputation cases at the observation hospital have been few, but they also have been very satisfactory. Of eleven cases all the patients have recovered. Seven were amputations through the thigh, two through the leg, and two were Syme's. Ten out of the eleven healed soundly either after immediate suture or after closure of the flaps on the third or fourth day. One failed to unite, and suppurated. Another very satisfactory result is that the whole of the patients have, so far, recovered whose wounds were sutured at the observation hospital. There has as yet been no death in the 175 patients operated on for suture, whether the latter was successful or not. Yet many of these men were very badly injured. More than 40 of the 175 had

fractured bones; 2 of them had torn femoral arteries (but have kept their limbs after ligature of the vessel); 2 had torn posterior tibial arteries; 8 had wounds opening the knee joint, in one of which the patella had to be excised; several had fractures opening the elbow joint; more than 20 had multiple injuries; 2 of them required transfusion of blood. Bowlby does not believe that all these men would have recovered if their wounds had not been closed.

The application of this treatment must remain largely a question of man power from first to last. First, it is only by having enough stretcher-bearers that the British can get in the wounded who cannot walk, and, one must add, enough strong stretcher-bearers. If men are not brought in soon their wounds cannot be sutured, so it is really a race against time and against the microbic infection, which has got the start of both stretcher-bearers and surgeons. Difficulties exist which, though they might not be thought of by the inexperienced, explain why men may arrive too late without any one being to blame. Both many and strong stretcher-bearers are required, and it is difficult to provide too many. It is not clear that delay in reaching a casualty clearing station may be unavoidable. In the second place, primary suture of wounds evidently requires surgeons in proportion to the number of the wounded. The British have already been able to operate on almost all the most serious cases at the casualty clearing stations in recent battles, and one wounded man out of about every three wounded was passed through the room and operated on under an anesthetic. The remaining two thirds were sent to the base, and many of them were in the class of the lightly wounded. In future, the wounds which have been excised but not sutured at the front, as well as probably some not yet excised, will be dealt with by hospitals placed further back than the casualty clearing stations, and thus, if there are enough surgeons, and if wounded are not too numerous, the surgeons hope to be able to insure that a majority of all suturable wounds shall heal by first intention. If their expectations are realized patients will not be so long in the hospital, and there will be less strain on staffs at the bases both in France and in England. Much depends on the incidence of the wounded and on the supply of surgeons. Bowlby puts in a special plea for plenty of medical officers in France.

2. **Gunshot Wounds of Abdomen.**—One hundred and fifty consecutive operations for penetrating abdominal wounds are analyzed by Charles. He points out that difference of opinion sometimes arises as to whether a gunshot wound of the abdomen involves the peritoneal cavity or not; indeed it is sometimes impossible to tell without a laparotomy, for the signs and symptoms usually associated with these cases are not constant. Experience will usually settle the point in each particular case. The following points taken collectively are important: 1. Position of the injury: It is first necessary to determine if possible the direction of the track. The entrance and exit wounds give an idea of the path of the missile and the structures likely to be involved. The absence of an exit wound does not necessarily mean that the foreign body is lodged in the abdomen. The possibility of its being buried in the parietes must be excluded. 2. The facial expression is usually one of anxiety. 3. Pain is not of great value, and may or may not be present. 4. Tenderness is a very constant and reliable sign. 5. Rigidity, or the absence of it, is often most misleading. 6. The pulse varies in rate; it increases directly with the gravity of the intraperitoneal lesion, and gives an important basis for prognosis. 7. Vomiting is usually present, but not necessarily. Thirst is a most distressing symptom. Roentgen-ray localization affords the most useful guide to the diagnosis of penetrating wounds of the abdomen.

The cases on their arrival at a casualty clearing station may be classified for the purpose of treatment, according to their general condition and irrespective of the class of wound, as follows: 1. In a dying condition, when nothing can be done except to relieve pain and thirst. 2. Showing varied degrees of collapse, but capable of resuscitation. 3. In good condition and operable. Preoperative treatment principally consists in treatment for shock. In Charles' opinion operation should not be undertaken before the patient has recovered from shock. In patients suffering from shock and hemorrhage Charles has often waited six hours or more, taking the risk of further hemorrhage, with results that have justified the delay. Provided the patient is warm, operation is done at once. Saline is given on the table during the operation.

4. **Infected War Wounds Treated with Magnesium Sulphate.**—During the past year Morison has been using a preparation of magnesium sulphate, made of the consistency of cream, as soon as the patients arrive in the hospital. To make the conditions as closely as possible resemble those that exist in a casualty clearing station, about 100 cases were dealt with as follows: The dressings with which the patients arrived in the hospital, most of which were applied from two to five days previously, were removed. A culture was taken of the organisms—aerobic and anaerobic—present in smears from the wound, and without any preliminary cleansing of the wound itself or of surrounding parts; magnesium sulphate cream was then applied to the wound under a suitable dressing. The dressing was left untouched for from three to ten days. Bacteriologic and clinical examination was then made of the discharges and the wound. The results have been encouraging. The cream is prepared in the following manner: 1.5 pounds of magnesii sulphas exsiccatus are mixed with 11 ounces of glycerin phenol (1:10). The dried magnesium sulphate is in the form of a fine white powder, which contains 12 per cent. less water than the ordinary. The glycerin phenol is put in a hot mortar and the sulphate added, slowly stirring and mixing with a warm pestle all the time. The result is a thick white cream, so hygroscopic that if exposed to the air it rapidly absorbs moisture and becomes fluid. It must be preserved in a covered jar. The phenol was first added for its analgesic properties, as it was thought that this application without it would be painful. Morison found this precaution to be unnecessary, as the only discomfort of which the patients complain when phenol is not present is that the cream feels cold for a short time after its application.

The wound is packed and thickly covered with the cream, and the dressing of gauze and cottonwool is left unchanged for from three to eight days. A profuse discharge of serum takes place, so that more wool may have to be applied over and around the original dressing. On removing the dressings, any discharge there may be is seropurulent, escapes easily, and the wound surface is covered with bright red granulations, filmed over by a thin layer of greyish lymph containing a few pus cells. A similar dressing is again applied spread thickly on gauze. In the case of deeper wounds, such as fractures, the cream is syringed into the deepest part of the wound by passing a piece of drainage tube attached to the syringe into it, and filling the wound with cream. More cream spread on gauze is applied to the surface of the wound. After a few dressings in this manner, in the case of superficial wounds, a bright red granulating surface presents, covered by a greyish film of lymph. The dressing is now changed to magnesium sulphate solution for a few days, when the edges of the wound are either brought together with sutures, or skin grafts are applied under local anesthesia.

In deeper wounds in which a fracture is also present, after three or four applications of the cream, at intervals of three to four days, the patient is anesthetized, the wound is freely opened up, loose pieces of bone are removed, it is washed out with ether or petrol, then dried with gauze mops and smeared thoroughly with bipp or X. Y. Z. paste—xeroform (bismuth tribromphenate), hydrargyrum ammoniatum, of each equal parts; liquid petrolatum to make a paste. The deeper layers of the wound are brought together with catgut sutures, and the skin edges with retention sutures of double bipped silk passed about 1 inch from the margin and tied over a dossil of gauze on each side spread with one or other paste. In some cases before the sutures are tied the cavity is filled with magnesium sulphate cream. The sutures prevent a too rapid escape of the magnesium sulphate cream by osmosis. The guides to closure of the wound are bacteriologic findings of the discharge and the amount and clinical nature of it.

Dublin Journal of Medical Science

February, 1918, **145**, No. 554

6 Half-a-Century of Mortality in Ireland. W. J. Thompson.—p. 65.
7 Acute Troubles of Bones. J. S. McArdle.—p. 85.

Journal of Laryngology, Rhinology and Otology, London

March, 1918, **33**, No. 3

8 Hairy or Dermoid Polypi of Pharynx and Nasopharynx. A. B. Kelly.—p. 65.
9 Fifty Cases of Innocent Laryngeal Growths. A. Wylie and W. Wingrave.—p. 71.
10 War Injuries and Neuroses of Otologic Interest. C. E. J. Phillipson.—p. 77. To be continued.

Journal of State Medicine, London

March, 1918, **26**, No. 3

11 Feeding Nation in Peace and War. D. N. Paton.—p. 65.
12 Problem of Disabled. R. Jones.—p. 77.

Journal of Tropical Medicine and Hygiene, London

March 15, 1918, **21**, No. 6

13 Scrotal Operations in Negroes. R. Howard.—p. 57.

Lancet, London

March 23, 1918, **1**, No. 4934

14 Therapeutic Influence of Roentgen Rays on Female Pelvic Disease. J. Phillips.—p. 427.
15 Ganglion Neuroma of Mesentery. J. B. Sutton.—p. 429.
16 Twilight Sleep; Its Advantages and Disadvantages. G. Blacker. —p. 430.
17 Radium Treatment of Scars. W. C. Stevenson.—p. 432.
18 *After-Effects of Gunshot Wounds on Joints. F. Romer.—p. 434.
19 War Neurasthenic. A. J. Brock.—p. 436.

18. **After-Effects of Gunshot Wounds on Joints.**—At the Croydon War Hospital an examination under anesthesia is undertaken in every suitable case in which there is any undue interference with the function of a part or in which some movable obstruction exists and where the roentgenogram shows no lesion likely to be aggravated by the examination or by the subsequent manipulations. The extent of the disability is determined, the limitation of movement defined; any fibrous adhesions are broken down and any obstruction capable of being rectified is overcome. No undue force is ever used, and in no case has inflammation or notable swelling followed, while considerable improvement has, in practically every case, resulted. Out of the first hundred cases thus operated on seventy-five returned to full duty. Massage is commenced within a few days of the manipulations, light in character if pain be present, more firmly otherwise. The pain from the breaking down is usually quite transitory and passes off in the course of an hour or so. Massage and radiant heat are continued for a week or ten days, when exercises by weights and pulleys are commenced. During the first week of these exercises massage is still continued, as the muscles are often inclined to be painful from their unaccustomed use. In certain cases a previous attempt had already been made, and some disturbance caused, in consequence of which the joint had been immediately placed at rest on a splint. The disturbance may possibly have been immediately due to a too early interference, or a too vigorous attempt at movement. Early interference is deprecated, where there has been destruction of tissue by gunshot or shell, followed by suppuration. No joint should be forcibly manipulated when a discharging sinus exists in its near proximity.

Romer says that in moving joints under anesthesia the failure to obtain a full range of movement is of small importance, if the limitation is due to contracted muscles or induration round the joint, and undue force should not be exerted for this achievement. After-treatment will usually regain the full movement, if sufficient freedom has been obtained under the anesthetic to enable the controlling muscles to act on the joint. The less force it is found necessary to employ the better is the prognosis of a good result. Joints blocked by dense inflammatory products do not respond well to forcible manipulation, but in suitable cases of joint stiffness restoration of function is materially hastened by its employment. The treatment given in the massage department includes radiant heat, hot-water and contrast baths, the ordinary massage manipulations and movements, besides the faradic, galvanic, and sinusoidal currents, and ionization. The treatment is given daily, in length varying according to the case, the minimum duration being half an hour. Special exercises supplement the massage, and are adapted to strengthen still further the weakened muscles and muscle groups, as well as to increase the range of joint movements. The weakened or injured muscle or groups of muscles are encouraged to act, and assisted in the action by the descent of weight, which has been raised by the sound antagonistic muscles. The repetition of this movement at first is strictly limited and the weight a light one, but as progress is made the weight is increased and the exercise lengthened. As further improvement is effected the range of exercises is extended, and becomes inclusive of those in which the weight, light at first and heavier afterward, is lifted by the affected muscles.

In Romer's opinion voluntary exercises performed on a pulley machine are in every way superior to the automatic movements obtained by mechanical machines based on the Zander type. For if a joint is so stiff that it cannot be moved or be encouraged to move voluntarily it is quicker to loosen it once and for all under anesthesia. In addition to these various forms of exercise swimming is found to be an agreeable and useful remedy in most cases of crippled limbs. As soon as the weakness of the special muscles or muscle groups has been overcome, and in cases in which there is no specialized muscular debility the proper use of ordinary gymnastic apparatus proved of material assistance in restoring the general tone of all the muscles and of thus taking part in the restoration of the lost function. The playing of games such as the throwing of the medicine ball, also aids in regaining the rapidity of action. It is surprising to notice how quickly men seem to forget the existence of disability in the excitement of games.

Medical Journal of Australia, Sydney

March 2, 1918, **1**, No. 9

20 *Experimental Study of Duodenal Ulcer. J. L. Jona.—p. 165.
21 Analysis of Melbourne Hospital Statistics of Duodenal and Gastric Ulcers for Five Years, 1912-1917. J. L. Jona.—p. 170.
22 Induction of Labor at Term by Pituitary Extract. H. C. Wilson. —p. 171.

March 9, 1918, **1**, No. 10

23 Differential Diagnosis in Abdominal Lesions. W. J. S. McKay. —p. 187.

20. **Study of Duodenal Ulcer.**—The occurrence of the peptic ulcer (gastric and duodenal) is explained by Jona as being due to the inhibition of the flow of saliva, pancreatic juice, succus entericus, and bile when these should be normally set up. This inhibition is caused by the absorption of toxic substances, which can be experimentally proved to have this inhibitory action. The exact site of ulceration depends on some local condition. Jona claims that duodenal and gastric ulceration can be prevented by preventing the absorption of toxins, abnormal products of tissue breakdown (as in burns) or the products of bacterial action, parasitic or saprophytic. When the ulceration is already established, he would not perform any side-tracking operation, such as gastro-enterostomy, without at the same time making some attempt to find out the cause of the condition and remove or remedy it.

Annales de Médecine, Paris

November-December, 1917, **5**, No. 6

24 *Painful Echinococcus Cysts of Liver. A. Chauffard.—p. 561.
25 *Dysenteric Abscess of Liver. E. Job and A. Spick.—p. 584.
26 *Meningeal Hemorrhage from Air Shock. G. Guillain and J. A. Barré.—p. 598.
27 *Chronic Dyspepsia in Soldiers. M. Péhu and M. Daguet.—p. 617.
28 *Contracture and Paralysis of the Feet. G. Roussy, J. Boisseau and d'Oelsnitz.—p. 647.
29 *Malaria in Troops in Macedonia. P. Armand-Delille, G. Paisseau and H. Lemaire.—p. 675.

24. **Painful Echinococcus Disease of the Liver.**—Chauffard remarks that the hydatid cyst in the liver is not a disease of the liver, properly speaking, but an accidental parasitic graft which develops slowly and insidiously, not attracting

attention until the size and weight begin to annoy. Pain does not form part of the clinical picture, but there may be an inflammatory reaction with development of adhesions which bring pain, and may even simulate gallstone mischief. The pain is a warning of superposed infection, as otherwise the parts yield to pressure, without pain. A number of cases are described which led to erroneous conclusions. In one physician of 38 a catarrhal jaundice and what seemed to be gallstone colics compelled an operation, but no gallstones could be found. The common bile duct was enlarged but was not opened. At a later operation, the common bile duct was found full of hydatid cysts and a large cyst found in the liver was evacuated. The findings indicated primary localization of the parasites at both these two points. In differentiation from gallstones, the shape of the enlarged liver, its anterior outline, differ materially from what we see with gallstones. If the liver is not enlarged, differentiation may be difficult, especially if the cyst is pressing on the lumbar plexus or other nerves, deceptively simulating gallstone colic. Or the toxins generated in the cyst may induce reflex pain.

25. **Dysenteric Abscess of the Liver.**—Job and Spick analyze their experiences with ninety-two cases of dysenteric abscess of the liver in northern Africa. Europeans are affected more than the natives, and the disease is exceptional in the blacks. In an ameba country, enlargement of the liver should always suggest dysenteric abscess, although the patient may not have any history of dysentery. In eighteen of their ninety-two cases there had been no known dysentery symptoms. Polymorphonuclear leukocytosis is an important sign of dysenteric abscess. Radioscopy and puncture aid in the diagnosis. When discovered early, emetin may cure after the pus has been evacuated. Injection of the emetin directly into the liver is advocated, besides. When all else fails, operative treatment should be considered after thorough emetin treatment.

26. **Meningeal Hemorrhage from Shell Air Shock.**—Guillain and Barré found evidence of meningeal hemorrhage in twenty cases of shell air concussion without direct contact. The clinical symptoms were confirmed by the hemorrhagic lumbar puncture fluid.

27. **Disordered Digestion in Soldiers.**—Péhu and Daguet report that roentgenography failed to reveal any organic basis for the chronic dyspepsia in 137 of 381 cases. In 139 others purely functional disturbances were observed; in 27 accompanied by much ptosis. In 32 actual ulcer or cancer was found; the other men were convalescing from wounds.

28. **Contracture or Paralysis of the Feet.**—These writers have published a similar study of the hand; here they discuss psychoneuroses manifested in talipes varus. They regard these crippling deformities as made up of several elements, including an actual traumatic contracture or paralysis, a superposed element of hysteria, and superposed nutritional disorders from the long immobilization and abnormal position. But the mind is the main element involved in the perpetuation of the deformity. When influence can be brought to bear on the mind sufficient to break up the vicious circle, the whole trouble may disappear at one stroke. These acrocontractures and acroparalyses seem to be as curable as any other purely psychoneuropathic disorders, with or without secondary disturbances. Hence the importance and practicability of prophylaxis.

29. **Malaria in the Macedonia Expeditionary Force.**—Delille and his co-workers declare that the epidemic of malaria that has affected the armies operating in Macedonia forms, if not the most important, at least one of the most important military epidemics known in history. Not since the armies of Xerxes were decimated by malaria in that same region, has there been a situation comparable to that of these modern forces in the Macedonian valleys and marshes. The extreme gravity of the infection, the early and large proportion of pernicious cases, the apparent failure of preventive doses of quinin, the prevalence of malignant tertian malaria—the quartan type was rare—and the frequency of hemoglobinuria, were special features.

Bulletins de la Société Médicale des Hôpitaux, Paris

Jan. 18, 1918, **42**, No. 2

30 *Hydratation of Diabetic Organs. A. Chauffard, P. Brian and J. Jacobs.—p. 49.
31 The Fifth Cusp. E. Jeanselme.—p. 51.
32 *War Tachycardia with High Blood Pressure. C. Aubertin.—p. 53.
33 Autochthonous Amebic Dysentery. Nobécourt and H. Gimbert.—p. 57.
34 Skin Diseases at an Advanced Post. J. Du Castel.—p. 60.
35 *Induced Eruption in Incipient Measles. Le Noir.—p. 63.

30. **Dehydratation in Diabetes.**—The research described has apparently demonstrated that there is no dehydratation of the organs in diabetes mellitus, even in the young, until the phase of diabetic coma. This entails in a few hours dehydratation of the blood and organs.

32. Summarized on page 892.

35. Compare with abstract 39, page 962.

Paris Médical

Jan. 19, 1918, **8**, No. 3

36 *The Respective Rights of the Wounded, of the Attending Surgeons and of the Pension Department. P. Delmas.—p. 50.
37 Local Anesthesia for Herniotomy. A. Schwartz.—p. 56.
38 *The Vascular Spasm with Intermittent Claudication. André-Thomas and J. L. Valensi.—p. 58.
39 Osteomyelitis of Skull after Operation. Phélip.—62.

March 2, 1918, **8**, No. 9

40 *Roentgenotherapy. E. A. Weil.—p. 161; (Of Uterine Disease). R. L. Lebard.—p. 168.
41 *Length of Exposure. G. Réchou.—p. 171.
42 Roentgenoscopy of Transverse Heart. E. Beaujard and G. Caillods.—p. 174.
43 Roentgenography of Wrist. P. Japiot.—p. 179.
44 Fluorescent Screen. L. Delherm and A. Laborde.—p. 183.
45 Calculation of Depth of Projectile. G. Foy.—p. 185.
46 Side Extraction of Projectiles. A. Rabourdin.—p. 188.
47 *Roentgen Signs of Tuberculosis. E. A. Weil.—p. 190.

36. **The Rights of the Wounded and of the Surgeon.**—Delmas remarks that as soon as the soldier enters the hospital, he steps out from under military discipline, and yet the hospital authorities have no jurisdiction over him. He can accept or refuse needed operations, injections of drugs, etc., at his own will. But almost invariably the wounded or sick soldier trusts absolutely to his surgeon or physician, so long as no foreign element modifies this grateful confidence. There can be only two reasons for refusal to consent to needed measures, fear or ignoble motives—fear of pain, of the anesthetic or of a fatal outcome, and fear of recovery and being sent back to the firing line. Delmas does not hesitate to call the man in the latter case a deserter. The physician or the surgeon should appeal to the man's regimental commander. The man should be sent back to his regiment with a report of his refusal, unless there are grave reasons against his being moved. The presence in the hospital of one such refuser saps the confidence of the other patients. The matter is thus placed in the hands of the military commander who can apply disciplinary measures. The regulations specify that no operation, properly so-called, especially if general anesthesia is required for it, can be done without the assent of the patient. He must be warned that his refusal will be duly considered in determining the amount of his pension. In any event, it behooves the surgeon and physician to write out a detailed report of the incident, under all circumstances. This will fix the respective responsibilities of the surgeon, the wounded and the pension treasury.

38. **Intermittent Claudication.**—In the two cases described, the inability to continue walking came from pain, not paralysis. There seems to be grounds for assuming that, besides the ischemia resulting from the causal arteritis, there is some superposed circulatory disturbance, and this can be only some spasm of some vessel. The facts that the limb grows cold and the oscillometer shows reduced blood supply sustain this assumption of spasm of the vessels. After resting a while, the limb grows warm again and the oscillometer shows renewed circulation. The exercise in walking brings more blood to the region. The blood meets with the obstacle of the endarteritis, and the resulting pressure on the walls

of the vessel above sets up a reflex pain and spasm, as when the catheter is arrested by stenosis in the urethra or esophagus. In one of the cases described the colic pain ran from the groin to the sole. Vascular spasm is also an element in the clinical picture of certain war contractures of hand or foot. Treatment for underlying syphilis or malaria, electrotherapy, massage and superheated air may be indicated in different cases.

40. **Roentgenotherapy.**—This issue of the *Paris Médical* is devoted to roentgen treatment. Weil discusses the general principles involved as modified by the latest experiences. He regards the maximal dose as 10 or 12 H units for the short wave rays, the hardest obtainable, passed through aluminum filters at least 1 cm. thick. With a very small area of exposure, this maximum might be surpassed. Slipping the skin to one side, and crossed-fire exposures might be supplemented by rhythmic swinging of the tube, permitting the rays to fall like an inverted cone on the focus while they are distributed in a circle on the skin. The manufacturers in France have not succeeded yet in realizing a device for this purpose. None of the methods to enhance the local susceptibility to the rays and aid in generating secondary rays have proved effectual.

41. **Length of Exposure.**—Réchou has devised a disk with logarithmic graduation which shows the proper length of the exposure under given conditions of rays, filter, length of spark, amperage and distance from the focus.

47. **Roentgen Signs of Tuberculosis.**—Weil enumerates among other signs the unchanging aspect of the shadow of the apex during breathing or coughing while the rest of the lung grows lighter. If the shadow of one apex clears up some time before that of the other apex, this must be regarded as suspicious, as also the lagging behind of one half of the diaphragm. But the most instructive sign, perhaps, is the fact that with old tuberculosis, tending to fibrous retraction, the apex looks small and pointed, while with active tuberculosis, especially in the young, the congested apex is seen to be larger than normal; the whole lung seems spread out, and the ribs are raised. The ribs make slight or no excursions in either case.

Presse Médicale, Paris

Jan. 17, 1918, **26**, No. 4

48 *Vaccine Therapy of Typhoid and Cholera. J. Danysz.—p. 29.
49 Flap for Hemostasis in Skull Operations. E. Velter.—p. 31.
50 Sulphur Waters in Treatment of Syphilis. R. D. Fardel.—p. 32.

Feb. 28, 1918, **26**, No. 12

51 *Chronic Lumbar Rheumatism. A. Léri.—p. 105.
52 *Pulmonary Edema after Skull Wounds. F. Moutier.—p. 108.

March 7, 1918, **26**, No. 14

53 *Cavities in Lungs. C. Mantoux and G. Maingot.—p. 125.
54 Thyroglosso-Epiglottic Space Phlegmon. Bellin and Vernet.—p. 127.
55 Treatment of Gonorrhea. P. Chevallier.—p. 128.
56 *Masked Amebic Dysentery. M. Decrop.—p. 129.
57 Vincent's Powder for War Wounds. P. Dezarnaulds.—p. 129.

48. **Principles for Preventive Vaccination Against and Bacteriotherapy of Typhoid and Cholera.**—Danysz argues that what we know of the infectious diseases acquired through the gastro-intestinal canal justifies the assumption that those persons alone develop the infection who are unable to digest completely the bacteria they have swallowed, that is, are unable to convert the albumins of the microbes into amino-acids. The course of the infection is determined by the number of bacteria ingested, the intensity and rapidity of the processes of digesting them, and the quantity of normal antibodies already in the blood. By taking into consideration the prevalence of the different types of bacteria, their susceptibility to gastro-intestinal digestion, and the permeability of the mucosa for the products of their digestion, these bacteria fall into four great groups. In diphtheria, the toxin, plus the normal antibodies, acts to cause the disease. When the antibodies are generated in excess, the disease stops. In the gastro-intestinal diseases, on the other hand, the stage of digestion of the bacteria, plus the normal antibodies, forms the period of incubation. The disease proper does not begin until the antibodies are generated in excess. This induces anaphylaxis, and the manifestations of this anaphylaxis form the disease proper. In typhoid, for example, the disease consists of a chronic state of anaphylaxis, or rather, a series of successive anaphylactic crises. Immunity and anaphylaxis are phenomena of every living being, from the microbe to man. A microbe entering a superior organism has to adapt itself to this new environment. It produces an intracellular antibody, then it produces an excess of antibody, and the antibody generated by the host serves as an antigen for the microbe, just as its own antibody is an antigen for the host. The outcome depends on the balance between the degrees of immunity and anaphylaxis of the microbe and of the host organism. When the microbe has fixed a corresponding amount of the host's antibody, on its own intracellular antibody, it is safe so long as it is laved outside by an excess of the host's antibodies. Let the content of host antibody drop below the proportion within the microbe cell, then the cell bursts by an anaphylactic shock. The aim in treatment, therefore, should be to reduce the excess of host antibodies in the host plasma. This can be accomplished by introducing more bacterial antibodies (killed bacteria). The excess host antibodies combine with them and there is no longer any excess of antibodies in the plasma. His practical conclusion is that for all the diseases of gastro-intestinal origin, preventive vaccination is promising, realized by prolonged ingestion of progressively increasing doses of the dead bacteria. The most effectual curative technic would be with specific bacteriotherapy by fractioned intravenous injections or frequently repeated ingestion.

51. **Chronic Lumbar Rheumatism.**—Léri remarks that the prevalence of chronic lumbar rheumatism may be estimated from the fact that at the date of writing there were seventeen cases among the 200 men in his service. The roentgen rays have shown that there is osteophytic proliferation with decalcification of the lumbar vertebrae. There was nothing to suggest syphilis or tuberculosis in any of the men, with one or two exceptions. The disease seems to come and go, each attack lasting from two to eight or ten months; the pain, tenderness and curvature then subside more or less completely. Many of the men had had previous attacks, but the frequency and intensity of the attacks justify classing this special, strictly localized form of vertebral rheumatism as a war disease. Even when the men are seated, in the trenches, they often have to rest their backs against a damp wall. Long marches in mud, with their equipment on their back, also adds to this "pathology of the back." This lumbar rheumatism is not usually accompanied by rheumatism of the joints, but the man stoops over although on reclining he can straighten his spine. Another feature of the cases is the concave outline of the vertebrae, so that they resemble the toy called the diabolo. Sodium salicylate and immobilization have given the best results in treatment to date.

52. **Pulmonary Edema after Skull Wounds.**—Moutier calls attention to the acute pulmonary edema which so often develops and proves fatal in men with war wounds of skull and brain. He explains how this is brought about by pathologic excessive functioning of the suprarenals. This causes the blood pressure to run up, the proportionately higher minimal pressure testifying to the specific vasoconstriction. The current practice of giving epinephrin to the wounded would do direct harm in such cases. Treatment should be that for acute pulmonary edema, that is, venesection. The danger is from the lungs, not so much from the skull wound.

53. **Cavities in the Lungs.**—Mantoux and Maingot give roentgenograms showing different types of shadows cast by cavities, the "porous bread" type, the "hornets' nest" type and the single large cavity type. Nothing suggesting either of these three types was found in 250 "closed" cases of tuberculosis or the suspects.

56. **Masked Dysentery.**—Decrop emphasizes that persisting diarrhea, even if not severe, but accompanied by pronounced weakness, should always suggest amebic dysentery, especially if there has been any intercourse with persons coming from tropical regions.

Progrès Médical, Paris

Feb. 16, 1918, **33,** No. 7

58 *Nerves Severed by Projectiles. E. Delorme.—p. 57.
59 *Trophic Lesions Accompanying War Wounds of Nerves. E. Duroux and E. Couvreur.—p. 62.

Feb. 23, 1918, **33,** No. 8

60 *Genital Complications of Typhoid Infections. A. Cade, E. Vaucher and G. Huchon.—p. 65.
61 Stenosis of Urethra from War Wound. F. Cathelin.—p. 66.
62 *Genito-Urinary Psychoneuroses. Uteau and Sauvage.—p. 68.

58. **Suture of Severed Nerves.**—The experiences with war wounds of nerves have only confirmed Delorme's teaching that the best results are to be obtained by cutting up to sound tissue and drawing the freshened ends together. This requires loosening up the nerve to mobilize it for a long distance, and placing the limb in a position to bring the stumps as close together as possible. Unless the cicatricial tissue in the nerve is resected up into sound tissue, it acts as an impenetrable barrier, so that mere releasing of the nerve from its cicatricial bed does not modify the resulting paralysis or trophic lesions.

59. **Trophic Lesions After Injury of Nerves.**—Experiments on dogs are described and a number of clinical cases, all testifying to the effect that there are no trophic nerve fibers, properly speaking, but that irritation of a nerve induces the trophic lesion, not suppression of the functioning of the nerve. The wearing off of tissue plus infection may induce lesions suggesting trophic disturbances but they are not true trophic lesions.

60. **Genital Complications of Typhoid and Paratyphoid.**—Seven cases of this kind have been published in France in the last three years, and five more are here reported. The orchitis was on one side only in this group of five. In two of the cases the typhoid and in three paratyphoid B bacilli were found. In two of the last three the lesion suppurated, and in one the suppuration kept up a long time, the testicle actually melting away. There were no other signs of disturbance in the urinary apparatus, so the infection was probably blood-borne.

62. **Urogenital Psychoneuroses.**—Two cases are described in young women that might be called cystalgia and urethralgia. In the cystalgia case the disturbances were ascribed to movable kidney, with possible lithiasis, and nephropexy was done although the exposed kidney seemed entirely normal. Nearly three years later the whole train of symptoms reappeared after some emotional stress; after failure of various medical measures, a course of psychotherapy banished them anew. Symptoms of pulmonary tuberculosis then suggested that the cystalgia may have been to some extent a manifestation of incipient tuberculosis. The success of psychotherapy in this case led to the application of similar measures in the urethralgia case. By a kind of psychanalysis it was ascertained that the trouble was the result of a mistaken comprehension of the anatomy of the region, the young married woman supposing that the vagina and the urethra were a single passage, although she had borne a healthy child. After three weeks of psychotherapy she threw off the urethralgia completely, and has had no return during the five months to date. It had been tormenting her for ten years and she had consulted a dozen physicians and taken all kinds of treatment. Uteau and Sauvage advocate a little hypnosis at first, to get the patient's confidences. This does not interfere with rational psychotherapy to follow at once.

Gazzetta degli Ospedali e delle Cliniche, Milan

Jan. 31, 1918, **39,** No. 9

63 Dermoid Cysts and Sarcoma of the Breast. F. Bindi.—p. 87.

Feb. 7, 1918, **39,** No. 11

64 Amputating Badly Shattered Limbs. G. Onano.—p. 105.

Feb. 10, 1918, **39,** No. 12

65 *The Gooseflesh Streak. G. A. Pari.—p. 113.

Feb. 14, 1918, **39,** No. 13

66 Posterior Enucleo-Exenteration of Eyeball. R. Pardo.—p. 125.

65. **Gooseflesh Streak.**—Pari calls the induced line of gooseflesh, *dermografismo orripilatorio,* and says that it can be so often induced in the healthy that it does not seem to have any diagnostic import.

Pediatria, Naples

March, 1918, **26,** No. 3

67 *Whooping Cough. O. Cozzolino.—p. 129.
68 *Progressive Ossifying Myositis. G. Caronia.—p. 145.

67. **Contagiousness and Prophylaxis of Pertussis.**—Cozzolino relates that he had 345 children with whooping cough at his dispensary at Cagliari in the first six months of 1913. Nearly 30 per cent. were under 12 months, and only 58.3 per cent. were over 2 years old. His experience confirms the extreme contagiousness of the disease during the primary catarrhal stage; some say it is not contagious after the first week, but he thinks it is better to assume thirty days as the limit. He has never seen contagion of other children from the pertussis children taken into the hospital from the fifth to the eighth week, nor from two in the middle of the third week. None of the children in adjoining beds even developed a spasmodic cough. A change of air and scene is useful in eliminating the nervous and psychic factors which cooperate in maintaining the spasmodic cough. The greater predisposition of girls to pertussis, and the larger number of girls attacked by the disease differ from what we know of acute infectious diseases in general.

68. **Progressive Ossifying Myositis.**—Caronia's case he thinks is the ninety-third on record. His patient was a little girl of 4, otherwise healthy, who had developed bony lumps in various muscles of trunk and arms, the protruding lumps giving the back the aspect of a raised map showing mountain ranges. Several roentgenograms confirmed the diagnosis of progressive ossifying myositis. No benefit was apparent from epinephrin, thyroid, thymus or pituitary extract, as has been the general experience. The literature on the subject is reviewed.

Policlinico, Rome

March 10, 1918, **25,** No. 10

69 *Prophylaxis of Cholera. D. A. Mazzolani.—p. 221.
70 *Acetic-Sulphuric Acid Test for Albumin. R. Leone.—p. 224.
71 *Prosthesis to Correct Paralysis of Leg. G. Boschi.—p. 226.
72 Successful Ligation of Femoral Artery. M. Sertorio.—p. 227.
73 Dental Service in the Army. E. Giovannini.—p. 228.

February, 1918, **25,** Surgical Section No. 2

74 Freezing Injuries of the Feet. P. Perazzi.—p. 33.
75 Experimental Lesions of the Pituitary. A. Chiasserini.—p. 44. Continuation.

69. **Isolation of Cholera Vibrio Carriers.**—Mazzolano remarks that the *locali contumaciali,* as the quarters for sheltering carriers are called, are proving one of the most effectual of the measures for preventing the spread of cholera. The public appreciate the necessity for this isolation, and it meets with no opposition. The emission of the vibriones is irregular, but as a rule it is continued in convalescence not later than the tenth or twelfth day. Of the 58 carriers or suspects thus interned at Sassari, some showed no signs of the vibrio for three or four days and others not till later than this. They disappeared from the stools of 20 carriers in five days, 12 carriers in ten days, 7 carriers in twenty days, and in 9 others between the twentieth and thirty-fourth days. The intermissions with negative findings were from three to sixteen days in length. One convalescent had five positive periods. Cholecystitis for which the vibriones are responsible may be the cause, or there may be actual reinfection. This suggests the necessity for special measures addressed to the cholecystitis, and to warding off secondary or repeated infection. Hexamethylenamin seemed to hasten the disappearance of the germs.

70. **Test for Albumin in Body Fluids.**—Leone's reagent superposes the precipitating properties of three precipitants. He pours into 100 c.c. of distilled water, heated, 10 gm. of potassium bichromate. After filtering and cooling, 100 drops of glacial acetic acid are added and, a few minutes later, 100 drops of a 25 per cent. solution of pure sulphuric acid. Of the reagent thus prepared, 5 c.c. are transferred to a test tube. Then the urine or other protein solution under examination is added with a pipet. At the zone of contact a whitish ring forms. When there is much albumin present, delicate whitish threads can be seen extending down into the fluid below like wisps of smoke. The reaction occurs at once or in four or five minutes. There may be further two zones of precipitation, separated by a limpid zone. The reaction is

not modified by the presence of iodin, mercury or salicylates in the urine. From the intensity of the whitish ring, its height and the rapidity with which it forms, the proportion of albumin present can be estimated. If there is no albumin, a brown ring forms from the combination of the urea with the reagent. When the whitish ring forms at once, with only a few c.c. of urine, there is always more than 0.5 per thousand albumin present. If the ring takes several minutes to form, there are only a few mg. of albumin.

71. **Prothesis for Paralyzed Leg.**—The prothesis described with illustrations is designed to correct paralysis of the external popliteal nerve.

Riforma Medica, Naples

Feb. 23, 1918, **34**, No. 8

76 *Extreme Meteorism in Soldiers. A. Ceconi.—p. 143.
77 *Operative Treatment of Hypospadia. G. Gianturco.—p. 147.
78 Early Diagnosis of Sciatica. A. Rocavilla.—p. 149.

March 2, 1918, **34**, No. 9

79 War Surgery and Ordinary Surgery. D. Giordano.—p. 162.
80 *Linear Stethoscope. G. Tomasinelli.—p. 165.
81 Tuberculous and Syphilitic Sigmoiditis. G. Cicconardi.—p. 169.

76. **Big Abdomen in Soldiers.**—Ceconi remarks that there are three types of meteorism in soldiers, free from digestive disturbance, to explain the extremely distended abdomens. In one type the trouble is caused by a hysteric, tonic spasm of the diagram. In the second type the meteorism is factitious, the men merely swallowing air to induce it. In the third type the meteorism is more in the flanks, and it occurs intermittently, reaching its height in twelve or sixteen hours and lasting for a few hours or days. Roentgenoscopy showed that the meteorism was mainly in the colon. The respiration in these cases was shallow, and this, with the pronounced bradycardia, gave the clue to the cases as vagotonic phenomena.

77. **Operation for Hypospadia.**—Gianturco says that the war has revealed that hypospadia is more common than formerly believed. About 0.5 per cent. of the men seem to be affected with it. He has modified the usual technic for penile hypospadia, and prefers spinal anesthesia for it. He cuts a torpedo-shaped flap in the skin, extending from the urethral opening to the tip of the penis. Then a triangular flap, with the point proximal, is cut below and removed. The sides of the torpedo-shaped flap are brought up over a greased catheter and sutured to make the new urethra; the proximal end is sutured to the freshened stump of the natural urethra. The skin of the penis is then loosened and brought up to cover the new urethra and likewise the raw triangle left beyond the old urethral opening. The result is a single new urethra, with a linear suture in the lower aspect of the penis. The appearance and functioning have been highly satisfactory in the cases in which he has applied this method.

80. **Linear Stethoscope.**—Instead of a round opening, Tomasinelli has the stethoscope end in a long bar, the whole thus forming a T. He declares that the findings are more instructive along a line than in a circle.

Rivista Critica di Clinica Medica, Florence

Feb. 16, 1918, **19**, No. 7

82 *Vaccine Therapy of Typhoid. F. Micheli and G. Quarelli.—p. 73. Commenced in No. 5, p. 49.

82. **Heterologous Vaccine Therapy of Typhoid.**—Micheli and Quarelli expatiate on the success of vaccine therapy of typhoid and paratyphoid as an appreciable conquest in the line of therapeutics. The attenuation of the clinical picture and reduction of the mortality (from 30 to 11 per cent. in Ishikawa's series and from 12 to 5 per cent. in Holler's) testify to the efficacy of this bacteriotherapy. As typhoid bacilli are so virulent, and as certain other bacilli seem to be fully as effectual for this vaccine therapy, they advise using bacteria of a different species rather than typhoid bacilli. Paratyphoid bacilli cannot be used as they seem even more toxic than true typhoid bacilli. The vaccine used must be exactly dosable, with an action that can be accurately graduated, and that is constant. These requirements are filled by vaccines desiccated in a vacuum and kept in fused vials. The writers, and also Moreschi, have been using with great satisfaction vaccines of this type for intravenous preventive vaccination. Small doses, eventually repeated after two or three days, proved most effectual in their experience. They take as a rule, for the initial dose, the amount of heterologous vaccine which in healthy persons induces a manifest thermic reaction. With typhoid bacilli vaccine they take twice this, on account of the greater tolerance in typhoid for the specific endotoxins. Experience has shown that patients refractory to small doses are equally refractory to the largest ones. Contraindications are cardiovascular insufficiency, grave kidney complications, diffuse pneumonia and menace of hemorrhage and perforation of the bowel.

The vaccine used in their tests of this intravenous heterobacteriotherapy was deuteroalbumose, meningococcus vaccine and cholera vaccine. The best results in the twenty-five cases of typhoid or paratyphoid were obtained with cholera vaccine, as the doses of this can be accurately graduated, while this vaccine is only slightly toxic. It is prepared by the Loeffler method (sterilization with dry heat at 100 or 110 C. of a loop desiccated in a vacuum). None of the patients were given more than two injections. The dose was from one-fifteenth to one-fifth of a standard loop, in 1 c.c. of physiologic solution. A chill always followed in from twenty to forty-five minutes. In three of the twenty-five cases a single injection was followed by definite defervescence. In 40 per cent. of the cases defervescence followed in the first to the fourth or seventh day. In another 40 per cent. the temperature only gradually subsided to normal, although the general condition showed equal improvement. Only one patient died, and this was on the thirty-fourth day, long after the vaccine had been given. There was a relapse in 20 per cent. of the cases, about the usual average. These experiences are compared with the work of others in this line.

Anales de la Facultad de Medicina, Lima

January-February, 1918, **1**, No. 1

83 Classification of Liver Diseases. E. Odriozola.—p. 1.
84 Grahamella Brumpti n. sp. Ribeyro and del Aguila.—p. **14.**
85 History of Peruvian Verruga. J. Arce.—p. 21.
86 Urea. M. A. Velasquez.—p. 56.
87 Mnemonic Formulas for Infant Feeding. Eyzaguirre.—p. 65.
88 *Insanity in Peru. H. F. Delgado and C. A. Bambaren.—p. 78.
89 Bacteriology of Ozena. J. A. Monteverde.—p. 112.

88. **Insanity in Peru.**—Delgado and Bambaren analyze the experiences at the Lima Hospicio de Insanos. The proportion of paranoia cases has increased in the last twenty-one years from 12.12 to 22.26 per cent. They note that the drunkards who get into the police courts seldom wind up in the asylum. The majority of the candidates for the asylum are those who drink but not to the point of visible intoxication. Some intercurrent disease, moral or traumatic shock or exhausting fatigue opens the portal to mental disease for which there is some constitutional predisposition. The effect of habitual drunkenness shows on the offspring. In prophylaxis they suggest sterilizing by means of the roentgen rays. This would avoid the drawbacks of other methods of sterilizing those unfit for procreation. They remark that this procedure seems so reasonable that they wonder it has not been applied. They have not been able to find any reference in accessible literature to its use for this purpose.

Prophylaxis of the mental causes of insanity is a question of education. The majority of psychoses are rooted in some internal conflict possibly early in life, hence wise training of the young in useful habits and adaptation of the child's mind to real life are the most solid guarantees of mental balance in the future. The writers quote freely from recent articles in THE JOURNAL, and reiterate that heredity is not an immutable law; its effects can be annulled or attenuated as they occur in plastic living beings who can be molded and trained. Peru has already an efficient system of medical school inspection and this promises to be of great aid in prophylaxis of insanity.

Archivos Españoles de Pediatria, Madrid

February, 1918, **2**, No. 4

90 *Concretions in Child Bladder. P. Borobio.—p. 65.
91 Treatment of Fever in Children. V. Lefort.—p. 77.
92 *Causes of Pain in Feet of Children. Riosalido.—p. 84.
93 Nodding Spasm in Children. C. S. de Los Terreros.—p. 93.

90. **Bladder Stones in Children.**—Borobio has operated in sixty-eight cases of concretions in the bladder of children; only two of the total number were girls. Most of the children were between 2 and 5. The youngest was 20 months. The stone was single in all his cases except three in which two stones were found. The children were invariably from poor families; he has never encountered a case of bladder stone in a child from a well-to-do family. Possibly the overwhelming vegetable character of the food may explain this. Pain, incontinence of urine and hematuria are the symptomatic triad but the pain is the only constant symptom. The suprapubic incision is the preferable procedure. In the fifty-two cases in which he has applied this measure there were three deaths, all during the second week, from infection of the urinary passages. In three cases, that is, in about 5 per cent., concretions formed again two and four years later. He did not operate in one case—a girl of 9—but forcibly dilated the urethra and extracted the stone. The child died the third day from urinary infection. Attempts to enter the bladder through the vagina, besides destroying the hymen, leave a fistula which is hard to cure, while dilatation of the urethra is liable to entail ascending infection.

92. **Pain in Child's Foot.**—Riosalido describes the different forms of disease that may attack the bones of the foot, and the best way to treat them. A roentgenogram should be taken of the foot from the front and side in every case of persisting pain in it. Some anomaly in development may cause disturbance like that in the tubercle of the tibia, or trauma may be responsible for the "apophysitis;" pain is the only symptom, pain in the heel, or a small bunch can be felt in the region. Supernumerary bones are not very rare, but often escape discovery in the roentgenogram. The supernumerary bones in his experience mostly involved the cuboid bone. The symptoms with these supernumerary bones were merely pain along the entire sole in walking, with no appreciable external sign of trouble. He gives roentgenograms showing the various types of apophysitis and of supernumerary bones, and two cases of an inflammatory process involving the scaphoid bone. One child had supernumerary bones in both feet. The tests for tuberculosis and syphilis were negative in the cases on record and in his experience. The inflammatory processes are generally growth disturbances, and usually subside promptly under rest and measures to reduce congestion. Some excessive muscular contraction, effort or trauma readily explains the trouble. In persisting cases it may be well to open and scrape the bone, as has been done for the tubercle of the tibia, to hasten the cure.

Medicina Ibera, Madrid

Jan. 17, 1918, **2**, No. 11

94 The University and the Medical School in Spain. E. Suñer.—p. 61.
95 *Treatment of Phagedenic Ulcers. E. A. S. da Aja.—p. 67.

95. **Treatment of Phagedenic Ulcers.**—De Aja explains the phagedenism as the sum total of various microbian associations. Salvarsan or its substitutes, tartar emetic and vaccines attack the lesion from within. Vaccines are more effectual with gonococcus lesions but they may be reenforced with the tartar emetic. The latter is more reliable for ordinary lesions and other venereal lesions. A few cases are described with intravenous injections of from 2 to 4 c.c. of a 2 per cent. aqueous solution of tartar emetic. One patient was a young woman with multiple and extensive syphilitic genital lesions. Three injections of the tartar emetic transformed the phagedenic ulcerations into clean surfaces with healthy granulations, and healing was complete by the end of the month. The lesions had been washed once a day with 1 per thousand permanganate and dusted with iodoform. Three injections of mercury were given also. He remarks in conclusion that phagedenism does not indicate increased virulence on the part of the causal agent but merely superposed infection, and under causal treatment and mild antiseptic local measures, the prognosis is favorable. Serpiginous lesions, on the other hand, indicate greater resistance on the part of the germs; the infection is occult in its progress and the prognosis is always graver.

Revista de Medicina y Cirugia, Havana

March 25, 1918, **23**, No. 6

96 *Dilatation of the Duodenum. F. Leza.—p. 147.
97 Vaccination Against Typhoid in Cuba. M. G. Lebredo.—p. 158.
98 Abdominal Hysterectomy for Cancer. J. E. Casuso.—p. 172.

96. **Dilatation of the Duodenum.**—Leza regards ptosis and dilatation of the duodenum as an important element in chronic constipation. It is determined in the clinic by pressure percussion and by the "paradoxic pressure." Light percussion does not show whether the tympanism is due to the colon or the deeper lying duodenum, but pressing hard flattens out the colon. Then only the duodenum can be responsible for the tympanism. The paradoxic pressure is realized by pressing with the palm on the abdomen, just below the umbilicus, applying deep and upward pressure. This forces the gases in the small intestine up into the duodenum, and it would seem as if this should increase the tympanism in the duodenum, but, on the contrary, the duodenum gases escape into the jejunum as the angle between them flattens out. This leaves the duodenum free of gases. The evacuation may be facilitated by gentle pressure and deep breathing. Other signs are the tympanism in the ileum from insufficiency of the ileocecal valve. This is ascertained by pushing down with the ulnar margin of the hand the gases in the ascending colon while the other hand palpates the region of the valve. If the valve is insufficient, the gases escape into the cecum; if not, they accumulate below the valve.

Vida Nueva, Havana

March, 1918, **10**, No. 3

99 *Tuberculosis of the Iris. A. Frias.—p. 100.
100 Pseudohistology. I. Castellanos.—p. 102.
101 Roentgen Therapy of Uterine Fibromas. E. Alamilla.—p. 108.
102 History of Medical Press in Cuba. M. R. Casabo.—p. 114.
103 Psoriasis and Its Treatment. J. C. Pineda.—p. 117.

99. **Tuberculosis of Iris.**—Frias reports two cases, one in a boy of 10 and one in a female infant of 9 months. In both the eye process seemed to be a primary tuberculosis and the eye was enucleated in each case. There has been no sign of tuberculosis during the six months since in the older child. He is in good health, but the infant seems frail and has bronchitis but nothing to suggest tuberculosis.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

Feb. 16, 1918, **1**, No. 7

104 *Harmless Glycosuria. O. J. Wijnhausen and M. Elzas.—p. 474.
105 *Chronic Osteo-Arthropathy. J. Munk and C. H. Greve.—p. 486.
106 *Treatment of Bronchiectasia. H. de Jong.—p. 495.

Feb. 23, 1918, **1**, No. 8

107 *Mumps Iridocyclitis. H. Weve.—p. 544.
108 *Gastro-Enterostomy. E. H. Van Lier.—p. 555.
109 *Blue Sclerotics. G. C. Bolten.—p. 560.

104. **Harmless Glycosuria.**—The glycosuria after sugar puncture, removal of the pancreas or injection of epinephrin is always preceded by hyperglycemia. But the glycosuria that follows after administration of phlorizin is not preceded by any increase in the sugar content of the blood; there is more likely to be hypoglycemia. The glycosuria here is evidently merely the result of increased permeability of the kidney in this case. The sugar content of the blood is the dangerous element, and when this shows no variation from normal or only slight variation after a test breakfast, then any glycosuria may be regarded as harmless, even although the sugar content of the urine may be quite considerable. There are only a few cases of this renal diabetes on record but Bang's micromethod has facilitated the search for them so that more cases are being discovered now. In the research here reported, the sugar content of the blood

was determined fasting and again an hour and a half after a breakfast of 150 gm. white bread with a little butter and a cup of tea but no milk or sugar. In the normal, the sugar content fasting was found from 0.8 to 1.15 per thousand. After the test breakfast it increased, but never above 1.45 per thousand. With a tendency to diabetes it rose to at least 2 per thousand. Fourteen cases of glycosuria are described in which the test showed 0.95, 1.04 up to 1.40 per thousand an hour and a half after the test breakfast. The highest figure was obtained in a nervous girl of 16. The other patients were adults from 22 to 40, including a physician and a teacher. The sugar content of the urine ranged from 0.25 up to 0.9 per cent. with 0.5 as the average.

The cases thus respond to the criteria for renal diabetes. Some symptoms suggesting true diabetes were noted in some but they may possibly be explained by the shock of being rejected for life insurance on account of their glycosuria or its discovery otherwise. They apply for treatment and the questions asked by the physician act by a kind of suggestion to elicit symptoms of thirst, fatigue, etc. We must bear in mind, likewise, that persons without glycosuria are liable to have furuncles, neuritis, etc. If the sugar content of the blood keeps within normal range, none of these symptoms should be ascribed to diabetes. On the other hand, persons with true diabetes may never have presented any of these manifestations so that renal diabetes is assumed until the hyperglycemia is discovered. Four other cases are described in which there is glycosuria with low sugar content of the blood, but it runs up a little higher than normal after the test breakfast. The patients keep well, however, with no signs of true diabetes. In another case a farmer of 32 belonged to the first group while his sister, nearly his age, had glycosuria of this second group type.

One example is given of a third type. The urine of the girl of 12 contains 0.9 per cent. sugar but no acetone. Even on a strict diet, the sugar content keeps at 0.3 or 0.5 per cent. On oatmeal days it increased to 2.9 per cent. The blood sugar ranged from 0.88 to 0.95 per thousand but after the test breakfast ran up to 2.38 per thousand. This case illustrates the importance of the test findings as otherwise the behavior of the blood sugar seemed to be normal. A fourth group is described showing what is called paradoxic diabetes. One of the three patients in this group was a young woman, the others were brothers of 10 and 7, with a sugar content of from 1.06 and 1.03 to 1.39 and 1.61 per thousand. It increased after the test breakfast to 1.68 and 1.95 per thousand, while the urine of the older boy contained regularly from 4.5 to 7.8 per cent. sugar and of the other child from 3.07 to 6.65 per cent. Strict antidiabetic diet reduced the glycosuria but then acetone and diacetic acid appeared. The children kept well and did not seem to suffer in any way from their diabetes, even when there were no dietetic restrictions. The highest figures for the glycosuria were obtained in the urine first voided in the morning. A fourth case is described which presented at first the findings of group one and then they changed to those of group four.

The course and outcome in the first two and the fourth groups are favorable, but the third group is not so harmless. The diplomellituria of this group stands closest to true diabetes. The others seem to be innocent diabetes; this term is preferable to "renal diabetes." We shall understand more about them if a case becomes known in which this harmless type becomes transformed into actual diabetes, or when the pancreas from a case of this kind can be studied. The patients keep well and need no restrictions, which renders the differentiation of these innocent cases so important. Wynhausen and Elzas insist that they should not be excluded from life insurance. Even the paradoxic type may not require an extra premium. The diet can be liberal. Restrictions are necessary only to prevent direct injury from the high sugar content of the urine. They add, "Beware of attempts to reduce the permeability of the kidneys for the sugar. This free elimination is probably the explanation of the favorable course." The fact that these twenty-four cases have been encountered in a comparatively short time shows that innocent glycosuria is more common than generally assumed. As there are no symptoms from it, physicians have no chance to encounter it except in examining for insurance, etc.

105. **Hypertrophy of Fingers and Toes.**—Munk and Greve describe the case of a girl of 15, a typical example of Marie's *osteo-arthropathie hypertrophiante pneumique*. The girl has had tuberculous pleuritis and the drumstick fingers and the enlarged toes are probably the result of a chronic tuberculous osteomyelitis and periostitis with stasis in the peripheral capillaries. The clinical picture resembles and may blend into Poncet's tuberculous rheumatism.

106. **Treatment of Bronchiectasia.**—The bronchiectasia was of several months' standing, the cough distressing and the sputum extremely malodorous, but no tubercle bacilli were found. One lung seemed normal but the temperature kept subfebrile. The man was in the hospital for nearly four months, growing weaker, and there seemed no hope from an operation. Then de Jong raised the foot of the bed by 40 cm., and gave him potassium iodid freely. At first this slanting position was maintained only one hour in each four, but the benefit was so prompt and so marked that the man begged to have the bed kept slanting all the time. The expectoration diminished, the cough subsided and in seven weeks the man left for his farm completely restored. One young girl given similar treatment was found in robust health a few years later. The iodid and copious drinking diluted the sputum and the sloping position ensured its expulsion. Operative measures are not very promising in treatment of bronchiectasia. The position treatment should certainly be given a trial first. Zaaijer has reported a case in which a young woman with bronchiectasia happened accidentally to discover the relief from lying with the shoulders low, and spontaneously assumed this position every morning.

107. **Mumps Iridocyclitis.**—Weve recalls three cases published by Heerfordt in 1909 in which chronic bilateral parotitis was accompanied by chronic iridocyclitis. Weve then reports three cases personally observed in which epidemic parotitis was evidently responsible for iridocyclitis. He thinks that this is more common than would be supposed from the scanty literature on the subject. This is explained by the fact that the iridocyclitis usually precedes the parotitis by from one to three weeks. The interval was two weeks, nearly three weeks and one week in his own three cases. When the salivary glands swell, the mumps is generally assumed to be an intercurrent infection, its connection with the eye lesion escaping recognition. Now that the parotitis virus is known to localize in the eye, possibly as its first manifestation, more numerous cases will certainly be encountered. Two of his three patients had had their iridocyclitis treated for several months without this connection having been recognized. In the third case, Weve inquired specially as to mumps, and thus the connection was revealed. The patients were a boy of 14, girl of 15 and woman of 28. The swelling of the parotid glands in the boy kept up for several months but then gradually subsided, and the iridocyclitis improved under scopolamin and cold compresses. Then nearly five months after the beginning of the symptoms there came an acute relapse of both the parotitis and the iridocyclitis. Weve then gave the boy four subcutaneous injections of convalescents' serum, but no improvement was apparent. Then he applied radium treatment to the eyes, and prompt benefit followed, the iridocyclitis retrogressing completely. In six weeks of treatment the right eye, which had resisted all treatment for a year, was entirely cured; the visual acuity with correcting glasses was 1.5. The radium treatment was then applied to the other eye with even more rapid cure.

108. **Gastro-Enterostomy.**—Van Lier's experiments on dogs have confirmed the clinical experience that a gastro-enterostomy near the cardia does not serve its purpose properly. The nearer to the pylorus the better, as this takes advantage of the natural peristalsis of the stomach. He brought the duodenal stump out through the abdominal wall, and also the efferent stump from the gastro-enterostomy. This made it possible to ascertain the exact behavior of both the openings in the stomach. The findings emphasize the superiority of

an opening close to the pylorus, and also the necessity for closing the pylorus, and doing it effectually. If the pylorus is left open, food passes out through it and the food may be returned to the stomach, thus unnecessarily overburdening it. But the principal reason for closing the pylorus is that when food is passed along into the duodenum, by reflex action not only the pylorus is closed but the evacuating movements of the stomach walls slow down. With the pylorus sutured to close it once for all, this retarding reflex does not occur, as it is not elicited by the jejunum. The chance of the vicious circle is also less with the pylorus shut off. Another argument in favor of closing the pylorus is that the duodenal ulcer thereby is spared the repeated irritation from the acid gastric juice.

109. **Blue Sclerotics with Other Congenital Anomalies.**—Bolten describes a female infant of 16 months with mongoloid idiocy and blue sclerotics. The family reside in Brussels.

Hospitalstidende, Copenhagen

Feb. 20, 1918, **61**, No. 8

110 *Pseudoleukemia. J. Nordentoft.—p. 225. Concluded in No. 10, p. 298.
111 *Protein Therapy in Eye Diseases. C. L. Andersen.—p. 244.

110. **Roentgen Treatment in Pseudoleukemia.**—Nordentoft reports fourteen cases of Hodgkin's disease or other forms of pseudoleukemia. The tumors were rapidly progressive, as a rule, but under roentgen treatment they melted away. After failure of all other measures, this vanishing of the symptoms and return of apparent health within a few days are most amazing. The disease is not conquered, however; constant recurrence is the rule, but there may be long intermissions and the recurrences generally subside equally promptly under renewed roentgen treatment. The greater the susceptibility to the roentgen rays, the graver the outlook; the more frequent, the more rapid and the more malignant the recurrences. There are a few complete cures to the credit of the roentgen rays, but they are extremely rare, and Nordentoft thinks that in many of them there was a mistake in the diagnosis. In his experience, two of his fourteen patients seem to be cured, but the diagnosis of a mediastinal tumor may have been erroneous in one case; the hemorrhagic pleuritis and adhesions may have been of tuberculous origin. In the other case the diagnosis of Mikulicz' disease seems more probable than pseudoleukemia. No other proliferation of lymphoid tissue was to be discovered except in the parotid glands, and the tumors in them had developed very slowly and were apparently benign. In none of the other cases was a cure realized or even to be anticipated. But the long intermissions between recurrences are equivalent to a cure in many cases. Only one of the total fourteen patients seemed to be refractory to the roentgenotherapy. Necropsy in this case showed necrotic processes for which the roentgen rays may have been responsible. In one young man a tumor in the neck, as large as a man's fist, subsided within a day. The exposure had been made at noon and by evening the subjective and objective improvement was pronounced. One girl of 11 with a large tumor masking the shadow of one lung entirely, gave normal roentgen findings with roentgenoscopy two weeks later. But the toxic action from the subsidence of this tumor was so great that the child died, and the conclusion seems inevitable that the roentgen exposure of the tumor was responsible for the fatality. An interesting feature of the roentgen treatment in some of these cases was that unexposed tumors, at a distance from the one being given the roentgen treatment, subsided along with it. This suggests that possibly the blood may acquire a weak radioactivity, sufficient to act on extremely susceptible tissue. But Nordentoft's experimental research on dogs failed to show any such action even when the negative plate was exposed to the blood for days at a time.

111. **Protein Therapy of Eye Disease.**—Andersen reviews the history of parenteral protein and nonspecific vaccine therapy and summarizes recent experiences in this line reported in Germany. P. V. Szily and A. Sternberg are very enthusiastic over the brilliant results obtained with a typhoid vaccine in gonorrheal ophthalmia, and R. Müller with parenteral injection of milk. Frozier and Darier have also reported good results from diphtheria antitoxin given in eye diseases. In contrast to the fine results reported by others, Elschnig called attention in the last half of 1917 to two cases of gonorrheal ophthalmia in which after three injections of milk the central portion of the cornea was cast off, with prolapse of the iris or, after two injections of milk, the surface of the cornea showed infiltration and casting off of the superficial layer. He warned that we cannot trust absolutely to the "magic action of this method of treating gonorrheal ophthalmia."

Hygiea, Stockholm

Feb. 28, 1918, **80**, No. 4

112 *Reduplicative Paramnesia. G. Elander.—p. 161.

112. **Reduplicative Paramnesia.**—This term or the expression, *déja vu* phenomenon, is used to designate the sensation sometimes experienced that the incident has been lived through before. It is not very uncommon for persons to have a vague feeling that the persons or incident in question has already been witnessed before. Elander describes a peculiarly pronounced case of this kind in a young man with incipient dementia praecox, admitted to the psychiatric clinic for the first time, who was convinced that he had been in the clinic before, some years ago. Elander explains this illusion of memory as a multiplying of the actual impression. The young man lost this reduplicative paramnesia in a few months, but the dementia praecox continued its progressive course.

Ugeskrift for Læger, Copenhagen

Feb. 14, 1918, **80**, No. 7

113 Surgical Impressions from a Trip to the British Front. V. Meisen.—p. 243.
114 *Dermatitis from Safety Matches. C. Rasch.—p. 258.

Feb. 21, 1918, **80**, No. 8

115 *Progressive Course of Myopia. O. Blegvad.—p. 287.
116 Alcohol-Chloroform-Ether General Anesthesia. G. Fangé.—p. 298.
117 Movable Cecum with Ileus and Perforation. S. Felding.—p. 301.

114. **Dermatitis from Safety Matches.**—Rasch has had seven men apply to him during the last four months for treatment of a skin disease resembling a mild burn on the thigh, in size and shape corresponding in each case to the trouser pockets. The hands, fingers and eyes also displayed analogous lesions. All were in the habit of using matches of a certain make and carried the boxes in their trousers pockets. The striking surface on the match box responded to the Mitscherlich test for poisonous white phosphorus. The matter is still under investigation, but all the symptoms permanently subsided when these matches were discarded and other makes used. Since Rasch called attention to this dermatitis from safety match boxes, a number of similar cases of this "match eczema," as it is called have been reported in Denmark.

115. **Progression of Myopia.**—Blegvad has been investigating the present condition of 155 adults with myopia given correcting glasses before they were 16. He tabulates the findings in 87 cases traced with special care, some examined several times. Of the 50 with full correction, the myopia had continued to progress in 76 per cent. as also in 70 per cent. of the 37 not given full correction. The average progression percentage was 0.44 D. for the full correction cases and 0.33 D. for the undercorrected. From these and other data presented, he concludes that correction has no influence on the progressive course of myopia. The amount of progress of the myopia decreases with age. Near work increases the tendency to myopia and stimulates its progress. This explains why those who leave school at about 16 and do not use their eyes much thereafter find their myopia keeps stationary, while in those who keep on studying or do much near work the myopia continues a progressive course. His charts and curves confirm that the earlier the myopia develops, the greater the degree liable to be reached. Also that heredity and near work explain the prevalence of myopia in all classes of society.